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# Unfair trading practices in the dairy farm sector: Evidence from selected EU regions

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## Abbreviations

CAPI	computer-assisted personal interviewing
EU	European Union
IQR	interquartile range
MS	Member State(s)
NUTS2	NUTS2 refers to regions belonging to the second level of the EU's Nomenclature of Territorial Units for Statistics
UTP	unfair trading practice

# Unfair trading practices in the dairy farm sector: Evidence from selected EU regions

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## 1. Introduction

The agri-food sector is witnessing increased moves towards closer vertical coordination in a drive to tackle market transaction costs. The key factors affecting the type and degree of vertical coordination in the food supply chain include asset specificity and the hold-up problem, uncertainty and asymmetric information. In addition, increasing consumer demand for food quality and diversity (e.g. animal welfare, food safety, traceability, quality standards and environmental concerns) has been pivotal in increasing vertical coordination among different actors in the food supply chain (see, for example, Reardon et al., 2003; Reardon and Swinnen, 2004; Weatherspoon and Reardon, 2003; Reardon and Barrett, 2000).

However, the actual impact of vertical coordination on the farming sector is still not fully understood and is subject to ongoing debate. Indeed, it is often argued that vertical coordination in the supply chain can enable farmers to reduce the risks associated with demand uncertainty and price fluctuations, and to have better access to credit and technology, as well as reducing transaction costs associated with accessing markets and leading to more efficient exchange of information and adoption of innovative organizational structures. On the other hand, the growth of vertically integrated markets in the food supply chain provides an opportunity for dominant firms to impose their influence on weaker players such as farmers (see, for example, Key and Runsten, 1999; Razafindrakoto and Roubaud, 2002; Gow, Streeter and Swinnen 2000; Swinnen, Beerlandt and Dries, 2003; Dries and Swinnen, 2004). Indeed, in the past few decades it has been observed that the increasing vertical coordination in the food supply chain has been accompanied by concentration in the input supply, processing and retail sectors. Market power may put farmers at a disadvantage when negotiating over price and contractual relations (see, for example, McCorrison, 2002; Sexton, 2000; Sexton, 2013; Bonanno, Russo and Menapace, 2018). Overall, the bargaining power of downstream and upstream industries makes farmers vulnerable to unfair trading practices (UTPs) in their contractual relations with input providers and output buyers (Fałkowski et al., 2017).

The imbalance in bargaining power between trading parties is one of the principal causes of UTPs. However, other factors can lead to an increase in UTPs, such as the switching costs involved in changing trading party, asymmetric information, incompleteness of contracts and the asymmetric costs of contract enforcement (e.g. in accessing justice). Each of these elements can lead to a different UTP, such as one-sided clauses in contracts, unilateral changes in contract terms, late payments or ad hoc changes to contract terms (Gow, Streeter and Swinnen, 2000; Renda et al., 2014; Fałkowski et al., 2017; Sexton, 2017a,b).

Unfair trading practices have recently come under intense policy scrutiny (European Commission (2013b, 2014a,b). In 2013, the European Commission adopted the European Retail Action Plan and a Green Paper on unfair trading practices in the

business-to-business food and non-food supply chains (European Commission, 2013a). The weak position of farmers in the food supply chain was highlighted in the State of the Union addresses of 2015 and 2016 (European Commission, 2015, 2016a). In June 2016, the European Parliament adopted a resolution on UTPs and requested that the European Commission assess the possibilities for policy action to address UTPs (European Parliament, 2016). In December 2016, the Council of Ministers called on the Commission to undertake an impact assessment with a view to proposing an EU legislative framework or other, non-legislative, measures in the area of UTPs (European Council, 2016b). As a response to these calls, in 2018 the European Commission published an impact assessment and a proposal for a directive on unfair trading practices in business-to-business relationships in the food supply chain (European Commission, 2017, 2018).

In parallel with this political interest, there is a growing body of scientific literature that directly or indirectly deals with the concept of UTPs. The empirical literature that recognises (implicitly or explicitly) the multidimensionality of UTPs is rather scarce (see, for example, Copa-Cogeca, 2013a, 2013b; Basic, 2015). On the other hand, there is a relatively large empirical literature that deals with one or selected forms of UTPs. This includes studies on market distortions caused by market power (Digal and Ahmadi-Esfahani, 2002; MacDonald and Key, 2012; Fałkowski and Ciaian, 2016; Perekhozhuk et al., 2016), price transmission (Vavra and Goodwin, 2005; Assefa, Kuiper and Meuwissen, 2014; Goetz, Taubadel and Kachel, 2008) and contracting and vertical integration (Katchova, 2013; Assefa et al., 2014, Otsuka, Nakano and Takahashi, 2016; Potts, Fernandez and Wunderlich, 2007). UTPs are not necessarily the primary focus of these studies. The same holds for the theoretical literature, although more theoretical studies are available that analyse the potential causes and impacts of UTPs. This literature finds that UTPs may have various adverse impacts on the functioning of EU food supply chains, potentially affecting income distribution among active agents, structural change in EU farming, food quality and food availability, and rural employment (Gow and Swinnen, 2000; Renda et al., 2014; Fałkowski et al., 2017).

The dairy sector is the subject of intense policy attention in the EU. The European Parliament and the Council have adopted a series of regulations (referred to as the Milk Package) establishing the policy framework for the dairy sector in EU. The objective of the Milk Package was to strengthen the position of dairy producers in the dairy supply chain and to prepare the sector to operate in a more market-driven environment. Among other things, it offers Member States (MS) the possibility to make written contracts between farmers and processors compulsory in the milk sector, and it allows farmers to negotiate contract terms collectively through producer organizations (EU, 2012a, 2012b, 2013). The dairy sector is particularly susceptible to UTPs because of the specific nature of the on-farm investments that a dairy operation requires, as well as the perishability and seasonality of milk.

This report attempts to shed some light on this topic by examining the incidence of UTPs in the dairy supply chain. This study is particularly relevant because it considers various forms of UTPs occurring at farm level. The literature analysing the incidence of UTPs at farm level is less abundant than that covering other segments of the food supply chain, particularly consumers (Dries, 2017; Fałkowski et al., 2017; Russo, Sorrentino and Menapace, 2017). By accounting for different types of UTPs, the study evaluates the presence and size of UTPs at different stages in farmers' contractual relationships with buyers. Note that this report focuses on UTPs reported by dairy farmers and does not cover other segments of the dairy supply chain. The analysis is based on a survey conducted among dairy farms in five selected EU regions located in four EU MS (France, Germany, Poland and Spain). The dairy farm survey data were collected through face-to-face interviews in 2017 and comprise 1248 observations.

## **2. Review of literature on the incidence of trading practices that are unfair to farmers**

### **2.1. Conceptual literature**

Food supply chains have become increasingly complex in recent decades. The organization and structure of food supply chains are characterized by complex interactions with increased vertical coordination usually achieved through contracting in agricultural markets (Ménard, 1996; Ménard and Valceschini, 2005; Vavra, 2009; MacDonald and Korp, 2011; Bonanno, Russo and Menapace, 2018). The key factors affecting the type and degree of vertical coordination in the food supply chain include asset specificity, the hold-up problem and behavioural uncertainty due to asymmetric information and transaction costs.

In parallel with the rise of vertical coordination, food supply chains have witnessed increased moves towards concentration in the input supply, processing and retail sectors (McCorrison, 2002; Sexton, 2000; Sexton, 2013). The growth of imbalances in market power, combined with the vertically integrated markets in food supply chains, provides an opportunity for players with power to impose their influence on weaker players (e.g. small suppliers). While market power is perceived to be the main cause of UTPs, there are other factors that create situations in which firms might abuse their position and use UTPs. Renda et al. (2014) identify further factors as main causes of UTPs, namely (i) imbalances in the bargaining power of firms, (ii) switching costs, (iii) asymmetric information, (iv) costs of contract enforcement, (v) perishability of goods and seasonality of production and (vi) transaction costs (Gow, Streeter and Swinnen, 2000; Renda et al., 2014; Fałkowski et al., 2017; Gorton, Lemke and Alfarsi, 2017).

Imbalances in bargaining power have been identified as one of the main causes of UTPs. When there are imbalances in bargaining power, firms with more power can affect contractual terms to their advantage. In this context, we use “bargaining power” to mean the ability to influence the behaviour of other firms, which could include price/quantity distortions – in the traditional market power sense – or other non-price/quantity distortions encompassing any aspect of transactions taking place in the chain (Bonanno, Russo and Menapace, 2018).<sup>1</sup> It mainly refers to unequal capacity to influence partners. In the context of a contractual relationship, this might generate different types of UTP, such as unequal contract terms, supply constraints imposed on farmers by the processor, or unilateral retroactive changes in contract and/or trade terms. This idea has been challenged by Sexton (2017a, 2017b), who argues against the idea that UTPs are more likely to occur in concentrated food supply chains, instead showing that, under certain market conditions, increasing concentration results in more efficient market outcomes and better conditions for farmers than in less concentrated food supply chains. In his view, the higher the concentration level, the better the position buyers (e.g. processors) are in to internalize the benefits of a steady supply from farmers (Mérel and Sexton, 2017). However, in the light of the transaction costs associated with contracting, smaller farmers will be vulnerable to UTPs when entering into long-term contractual relationships with large buyers. For example, although large buyers may provide farmers with incentive schemes to produce at optimal efficiency, they may also extract quasi-rents from farmers by imposing various trading practices (e.g. two-part tariffs, territorial supply constraints,

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<sup>1</sup> According to Bonanno, Russo and Menapace (2018), the main difference between market power and bargaining power is that, under the former, price distortions occur because the strong firm alters the quantity traded on the market (i.e. it purchases/supplies less). In a bargaining power context, the strong firm uses a threat to achieve its objectives. Bargaining power might not necessarily result in price/quantity distortions. Firms might employ the most efficient contractual arrangement while using bargaining power to alter the terms to their benefit (including using UTPs) (Muthoo, 1999; Bonanno, Russo and Menapace, 2018).

retroactive charges) that have, among other effects, income distributional effects (Bonanno, Russo and Menapace, 2018). Similarly, an imbalance of bargaining power can be caused indirectly by a lack of alternative trading partners, which might make suppliers dependent on one specific buyer who sets the rules.

Costs associated with switching trading party are another reason why UTPs can arise. It is argued that these costs might be a barrier to exiting a particular commercial relationship. A common situation when switching costs can occur when there is a relationship (contract)-specific investment. When a firm invests in assets or skills (e.g. technology, know-how) specific to a particular commercial relationship that are less valuable in other settings (e.g. with an alternative trading partner), it becomes vulnerable and exposes itself to potential misuse (to UTPs) by its trading partner. Positive switching costs reduce the likelihood of switching trading party, which gives a rational trading counter-party the chance to alter the contractual terms in its favour. That is, the requirement to invest in (contract)-specific assets leads to the so-called hold-up problem, whereby a buyer can exploit ex-post the fact that farm product supply is inelastic in the short term (reinforced by the perishability of farm products), and makes it costly to switch buyers because of the sunk costs of the specific asset. Hold-up can be defined as "the general business problem in which each party to a contract worries about being forced to accept disadvantageous terms later, after it has sunk an investment, or worries that its investment may be devalued by others" (Milgrom and Roberts, 1992, p. 136). This is exacerbated by the fact that contracts in the agri-food sector are usually shorter than the life-span of farmers' specialized sunk assets required by buyers. The contractual arrangements that might signal less use of UTPs by buyers in this type of situation include the provision of contractual terms for reducing risk associated with commercial dependence (e.g. providing credit for investments and input purchases, technical support), long-term contracts or frequent extension of contracts (Gow, Streeter and Swinnen, 2000; Bonanno, Russo and Menapace, 2018). The types of UTPs that arise from switching costs are identified by terms that impose on one of the partners, directly or indirectly, the obligation to make specific investments or that associate the provision of credit with specific inputs.

Asymmetric information and incomplete contracts are also considered a source of UTPs. Imperfect information about the probability of an outcome may lead to mistakes in business decisions on one side and to the adoption of terms or dispute resolution mechanisms that might favour only one party. A stronger player may extract rents due to incomplete contracts and may also get better access to information after the contract has been concluded (during its execution) through exploiting the gaps in the contractual relationship by adjusting the benefits, costs and risks to the detriment of the weaker player. Often in the agricultural sector the buyer (e.g. the processor) conducts quality tests and thus can accrue information rents by reporting that quality levels are lower than they actually are so that the price paid to farmers is reduced. In addition, buyers may take advantage of ambiguous quality requirements in the contract by using these to reject surplus deliveries when farmers' production is particularly high (e.g. because of good weather conditions) or when demand for buyers' products is depressed. Generally, third-party quality verification is proposed to avoid this type of UTP (Pultrone, 2012; Saenger, Torero and Qaim, 2014).

Thus, contracts that are agreed when there is asymmetric information may incentivize exploitation by, for instance, shifting commercial risks to, or imposing additional obligations on, the weaker party through ambiguous contract terms. Other consequences of asymmetric information may include the use of threatening or abusive behaviour in an attempt to obtain an economic advantage. It is also often reported that ambiguous contract terms can lead to overdue contractual disputes.

The asymmetric costs of contract enforcement are another cause of UTPs. These costs arise when firms have expensive and unequal access to dispute resolution mechanisms for enforcing contractual arrangements. The dispute resolution

mechanism can be private (e.g. through voluntary codes of conduct or independent dispute resolution mechanisms), judicial (through the courts) or administrative (through government-set administrative authorities). Each dispute resolution mechanism has implications for who incurs the costs and their magnitude. In the case of administrative enforcement, the administration incurs the costs, while in the case of private and judicial enforcement the costs are usually borne by the private sector (e.g. farmers or buyers). The size of and differences in the costs of dispute resolution mechanisms for various actors in the food supply chain not only have important income distributional effects but also have implications for the effectiveness of the enforcement itself and thus potentially for the occurrence of UTPs. For example, small farms may not have sufficient financial resources to finance lengthy court disputes, and also they may be risk averse when it comes to agreeing to compensate the opponent's legal expenses in the event of an unfavourable ruling. In contrast, large firms are often better financially endowed and more likely to bear the costs of legal actions, especially against small players. The high costs of contract enforcement may deter small firms from entering into legal disputes or it may make legal action on their part a non-credible threat in the event of a contractual breach. This may be exploited by a stronger counter-party inflicting UTPs on its trading partner, especially if the latter faces higher dispute resolution costs, making legal action on its part less credible. Furthermore, the so-called fear factor may come into play, particularly for repeated transactions or in a long-term business relationship with the same partner. The fear of damaging the business relationship by taking the dispute to the courts or a third party may lead to inaction on the part of the victim (Butler and Herbert, 2014; Iamicelli and Cafaggi, 2017; Swinnen and Vandevælde, 2017).

Perishability of goods and seasonality of production affect the costs of storage and transportation. Highly perishable goods cannot be easily stored and transported, limiting the geographical area where they can be marketed. If perishable goods are seasonal, then temporal trade cannot be fully exploited. Farmers have to distribute their products to the market within a relatively short time in the season when supply is usually high. As a result, because of the costly geographical and temporal trade, producers rely on local markets and oversupply the market in high production season. Overall, the cost of storage and transportation, combined with limited local competition, reduces the bargaining power of suppliers of perishable and seasonal goods in commercial negotiations and makes them more vulnerable to UTPs.

The nature of the aforementioned trading practices may have various adverse impacts on the functioning of EU food supply chains in general, and may negatively affect various aspects of farmer decision-making processes in particular. UTPs are, importantly, linked to the way contractual terms between farmers and buyers (e.g. processors) are negotiated, how they are set and how they are respected during the business relationship. This directly translates into revenues earned and costs incurred by farmers, which affects farm profitability. Reduced farm profitability may lead to more farmers leaving the industry, disincentivize new entrants to the sector, reduce investments and suppress improvements in productivity. Reduced investment may be particularly likely to occur in business relationships where farmers are required to invest in specialized sunk assets. UTPs may contribute to increased market uncertainty, which distorts farmers' investment decisions and therefore limits innovation and growth. As a result of these effects, at the aggregate level, UTPs can influence the competitiveness of the sector as a whole (increase chances of farm exit, inhibit market entry) and may lead to market failures (e.g. driving out high-quality products from the market). Furthermore, UTPs may affect how income is distributed and passed along the food supply chain. For example, powerful intermediaries may not pass the gains earned from downstream industries on to farmers but retain them. It is commonly argued that small farmers are most vulnerable to UTPs and most likely to be affected by these unfavourable outcomes (Fałkowski et al., 2017; Gorton, Lemke and Alfarsi, 2017).

## 2.2. Empirical literature

There are few empirical studies in the literature investigating the incidence of UTPs in the farming sector. This is particularly true for the literature that considers (implicitly or explicitly) UTPs' multidimensionality. An attempt in this direction is the study by Basic (2015), which analyses UTPs in the banana sector. The study considers various forms of UTPs rather than focusing on a restricted set of possible forms. The study attempts to analyse both the occurrence and the impacts of UTPs. A similar attempt is made in the study by Copa-Cogeca (2013a, 2013b), which conducted a survey in the European agri-food sector to quantify the occurrence and impacts of UTPs in the EU food supply chain. However, to our knowledge an overall assessment of the occurrence of and a quantification of the impacts of the various forms of UTPs have not been conducted in a scientific study on UTPs.

The empirical literature that deals with one or selected forms of UTPs is much larger (see, for example, Digal and Ahmadi-Esfahani, 2002; MacDonald and Key, 2012; Perekhozhuk et al., 2016; Vavra and Goodwin, 2005; Assefa, Kuiper and Meuwissen, 2014; Katchova, 2013; Assefa et al., 2014, Otsuka, Nakano and Takahashi, 2016; Potts, Fernandez and Wunderlich, 2007). This literature considers one or selected aspects of UTPs without providing a comprehensive analysis of all relevant elements of UTPs. Note that UTPs are not necessarily the primary focus of these studies. They usually analyse how contracting, governance and other aspects of inter-firm interactions in the food supply chain impact, among others, welfare effects, firm performance and price transmission and not whether "unfairness" in business relationships occurs.

The study by Basic (2015) analyses the incidence of UTPs in relationships between banana buyers in Europe and banana producers in exporting developing countries based on interviews with more than 60 people involved in the banana industry in several Latin American countries and also on a survey conducted in Costa Rica. The study reveals several UTPs in banana supply chains, such as (i) one-sided clauses in contracts that stipulate that "the buyer can withdraw from the contract at any point in time if his margin is insufficient" (i.e. transfer of risks to exporters and producers); (ii) increased occurrence of last-minute cancellations, rejections and/or quality claims during low-price (oversupplied) seasons (asymmetric risk sharing); and (iii) small producers often being used as buffer suppliers by large plantations. Small producers are also regularly charged extra costs by exporters and plantations for alleged "services" (e.g. for providing banana boxes and for transport), which can amount to 40% of the price stipulated in the contract. The study also reveals the presence of fear factor among banana producers that the commercial relationship could be terminated if they were to raise a complaint against the buyer.

Copa-Cogeca (2013a, 2013b) conducted a survey in the European agri-food sector to quantify the types and frequency of UTPs in the EU and to evaluate the economic impacts of UTPs. The survey covered 434 professionals among 3 main target groups – farmers (214), agri-food cooperatives (165) and others (e.g. processors) (55) – from 21 EU countries. The survey considered 17 different forms of UTPs that may occur in the food supply chain. The results show that the surveyed firms tended to be more exposed to UTPs at the time when the survey was conducted than in the past (5 years previously). Almost every sampled firm (94% of all sampled firms) was affected by at least one UTP. Similar results were found for farmers, with 94% of them experiencing at least one UTP. The five most frequent UTPs were (i) imposing a requirement to fund the cost of promotion (59% of respondents), (ii) imposing general terms and conditions that contained unfair clauses (56%), (iii) refusing to put or avoiding putting essential terms in writing (51%); (iv) threatening business disruption (or termination) to obtain an advantage (51%); and (v) imposing a requirement to fund a contracting party's proprietary business activity (48%). Farmers reported that UTPs most often

occurred during the post-contractual phase (in 44% of sampled farms), followed by during the pre-contractual phase (25%) and during contractual negotiations (20%). The rest of the surveyed farmers (21%) did not know or did not answer the question regarding at which stage of contractual relations UTPs occurred. Around 45% of farmers were at least occasionally exposed to all 17 UTPs considered in the study.

The results of a survey conducted by the Spanish Competition Authority, with the aim of analysing relations between suppliers and retailers in the food sector, show that 56% of responding suppliers were frequently or occasionally subject to retroactive changes to contract terms (CNC, 2011). Similarly, a survey conducted by the Italian Competition Authority shows that 57% of producers often or always accepted retroactive unilateral changes in contract terms because they were afraid of losing the commercial relationship if they refused the changes (Italian Competition Authority, 2013).

CIAA-AIM (2011) surveyed about 686 companies from processing and retail sectors in 15 MS to analyse the incidence and impacts of UTPs. The survey results show that almost all surveyed companies (96%) were exposed to UTPs. The most common UTPs were (i) lack of respect of contractual terms by some customers (84%), de-listing threats to obtain unjustified advantages (77%) and unilateral deductions from invoice payments without sound business reasons (63%). Most of the surveyed firms (65%) did not take action when confronted with UTPs because of fear of customer/commercial sanctions, while 50% of surveyed firms did not do so because they did not trust the effectiveness of the available public dispute resolution mechanism (CIAA-AIM, 2011).

Davis and Reilly (2010) reported the results of the UK Competition Commission's survey carried out among 456 suppliers on UTPs exercised by retailers in the previous 5 years. According to the survey results, between 37% and 48% of surveyed suppliers experienced practices such as payment delays, excessive payments to complaining customers, additional services required and retrospective price adjustments.

A common UTP reported in the literature is delayed payments. For example, Berdegué (2001) reported 60 to 70 days' delay in payments after delivery practised by supermarkets with respect to small farmers' economic associations in the fresh fruit and vegetable sector in Chile. Gow, Streeter and Swinnen (2000) reported an average payment delay of 100 days by food processors to farms supplying raw materials in Slovakia in the early transition period in 1994 and 1995. The survey results of Davis and Reilly (2010) indicated that 48% of suppliers in the UK had experienced payment delays by retailers in the previous 5 years.

The literature on standards and globalization offers some implications for UTPs, the effect of which can go in both directions. The increased globalization of food markets and the growing foreign direct investment in the food sector have brought about radical changes in the functioning and organization of supply chains. Some of the key features of this development have been the expansion of vertical integration and the introduction of higher food quality and safety standards for farmers from developed countries. Modern retailing and processing companies (multinationals) increasingly dominate international and local markets in the food sectors and influence the global trade by setting the standards for food quality (Reardon et al., 2002, 2003; Reardon and Swinnen, 2004; Weatherspoon and Reardon, 2003; Reardon and Barrett, 2000). Critics of the expansion of global retailing and processing companies argue that these firms create unfair competition with local firms in developing countries, exploit local labour and are poorly integrated into local economies (Razafindrakoto and Roubaud, 2002). An increasing number of studies are analysing the socio-economic impacts of foreign investment and the establishment of multinationals in developing countries, providing mixed evidence. Several studies indicate adverse effects or insignificant benefits of foreign direct investment and multinationals on (small) farmers, labour and

local communities (see, for example, Key and Runsten, 1999; Reardon and Barrett, 2000; Reardon et al., 2003; Kirsten and Sartorius, 2002; Delgado, 1999; Weatherspoon et al., 2001; Nunnenkamp, 2004). These results are in contrast with those of other studies that have found that (small) farmers and local labour benefit from foreign direct investment and multinationals as a result of a combination of effects, such as improved access to inputs, credit, extension services and technology adoption, as well as productivity spillover effects and greater income stability (Gow, Streeter and Swinnen, 2000; Swinnen, Beerlandt and Dries, 2003; Dries and Swinnen, 2004; Maertens, Colen and Swinnen, 2011; Maertens and Swinnen, 2012; Vandeplass et al., 2013). Another finding of these studies is that the growth in foreign direct investment and multinationals has led to the introduction and spread of innovative contractual arrangements, which has caused a reduction in UTPs, among others, by reducing/eliminating delayed payments, providing better contract terms and providing better arrangements for contract enforcement (see, for example, Gow, Streeter and Swinnen, 2000; Swinnen, Beerlandt and Dries, 2003; Dries and Swinnen, 2004).

Evidence from the transition process from central planned system to market system in Central and Eastern Europe in the 1990s showed that foreign direct investment and the entry of multinational processing companies contributed to a reduction in UTPs. One of the effects of the transition process was the break-up of the pre-reform system of contracting and contract enforcement in the overall economy, including in the agri-food sector. With imperfectly developed market and legal institutions, enforcement problems within the agri-food sector caused contractual disruptions during the transition process to market-based institutions. In the absence of credible and enforceable contractual arrangements, the opportunity existed for parties involved in the contractual relations (especially those with bargaining power) to engage in UTPs with the aim of extracting rents. This behaviour was particularly prevalent when one party made investments specific to the business relationship, allowing the other party to appropriate quasi-rents by renegotiating the contractual terms *ex-post* (i.e. the hold-up problem) (Gow, Streeter and Swinnen, 2000; Gow and Swinnen, 2000). The entry of foreign direct investment into transition economies allowed food processing companies to introduce private, self-enforcing contractual arrangements to incentivize farms to make contract-specific investments. These innovative contractual arrangements introduced by private capital reduced the occurrence of UTPs (Gow, Streeter and Swinnen, 2000; Gow and Swinnen, 2000; Dries and Swinnen, 2004). For example, Gow, Streeter and Swinnen (2000), using a case study of a sugar processing company in Slovakia from the transition period in the 1990s, showed that the innovative private contractual arrangements introduced by a foreign sugar processing company led to a reduction in UTPs. Before the domestic sugar processing company was acquired by the foreign company (i.e. before 1993), it was involved in UTPs, particularly in long delays in payments (of up to several months) to farms for sugar beet deliveries.<sup>2</sup> After the acquisition in 1993, the company introduced several contractual innovations to make contracts self-enforcing and thus reduce the likelihood of a hold-up, as perceived by the beet producers. This included input provision and an investment facilitation programme for farms that signed long-term sugar beet delivery contracts with the company; a fixed base price, slightly higher than the prevailing market price, to be paid on time; bonuses and penalties depending on the quality of the sugar beet delivered; and technical support and extension programmes (e.g. agronomical support, soil testing, and production and managerial advice).<sup>3</sup> Additionally, these contractual arrangements reduced hold-up costs for sugar

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<sup>2</sup> The payment delays effectively provided the processing company with an interest-free loan. With the high inflation rate in Slovakia in the early 1990s, the implicit rent extraction from farmers was significant.

<sup>3</sup> Through the input provision facilitation programme, farmers could purchase inputs (e.g. seeds, fertilizer, chemicals) at reduced prices that were negotiated by the processing company with suppliers; in addition, the processing company guaranteed the repayment of the input purchases. For the investment facilitation programme, the processing company guaranteed the repayment of farms' loans and provided the farms

beet farms because the contractual commitments increased the relationship-specificity of transactions for the processing company (Gow, Streeter and Swinnen, 2000).<sup>4</sup>

The empirical literature suggests that UTPs have significant impacts on farmers' performance and that the effects may take different forms. The analysis conducted by Basic (2015) of the global banana supply chain suggests that UTPs accelerate the disappearance of small banana producers and contribute to worsening working conditions in Latin American countries. The survey by Copa-Cogeca (2013a, 2013b) reveals that the five most important negative impacts of UTPs on farmers (as reported by surveyed farmers in EU) relate to profitability (72% of surveyed farmers), cost uncertainty (70%), turnover (67%), costs of delayed payments (67%) and relationships with contractors (64%). Copa-Cogeca (2013a, 2013b) estimates the total aggregated costs of UTPs at EUR 10.9 billion for the agricultural sector for the 21 EU countries studied, of which EUR 4.8 billion is the cost to farmers and EUR 6.4 billion is the cost to agri-food cooperatives. The survey results of CIAA-AIM (2011) for processing and retail firms in 15 MS show that UTPs have a negative impact on firms' costs (83% of all respondents), sales (77%) and innovation (40%). The estimated costs of UTPs represented 0.5% of the turnover of the surveyed firms (CIAA-AIM, 2011). Gow, Streeter and Swinnen (2000) show that the reduction in UTPs caused by the introduction of innovative contractual arrangements by private foreign capital in the sugar sector in Slovakia during the transition period in the 1990s had a significant positive effect on the output and efficiency of both sugar processing companies and sugar beet farmers. The evidence suggests that promotion of fairtrade practices<sup>5</sup> in developing countries may provide farmers with, inter alia, increased stability, fairer remuneration, greater capacity, less price uncertainty, better market access and more equitable distribution of income along the supply chain (see, for example, Beyer, 2008). However, the findings in the empirical literature suggest that the impact of fairtrade may not always be straightforward and that positive effects may not materialise for small farmers (DeFries et al., 2017)

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with an interest rate subsidy between 3% and 7%. By accepting the residual claim on these investments through guarantees made to the companies providing inputs and credit to the farms, the processing company effectively increased its own costs of contractual breach, thus making its fulfilment of the contract obligations more likely and more credible (Gow, Streeter and Swinnen, 2000).

<sup>4</sup> For example, in the event of delayed payments, farms would not have to pay for their purchased inputs and would lose only returns on their labour and personal capital contributions. The investment in technical support and extension programmes for farms increased the level of relationship-specific investment that the processing company had committed to farmers' human capital (Gow, Streeter and Swinnen, 2000).

<sup>5</sup> In principle, fairtrade is a concept opposed to UTPs. The promotion of fairtrade in developing countries aims to achieve better trading conditions (to avoid UTPs) and thus is expected to generate positive impacts on farmers and/or local communities.

### **3. Survey design and sample description**

The analyses carried out as part of this study were based on a cross-sectional dairy farm survey, which used a stratified multi-stage sampling procedure with a random selection of the final sample units (i.e. dairy farms). The core sample comprised farmers who managed a dairy farm in 2016/2017 and for at least 2 consecutive previous years. The survey covered five regions in four EU countries: Germany (Bayern), France (Normandie), Poland (Podlaskie) and Spain (Galicia and Asturias). The 1248 surveyed farms were split as follows: 204 in Bayern, 204 in Normandie, 335 in Podlaskie, 405 in Galicia and 100 in Asturias. Data were collected through face-to-face interviews between April and August 2017 using a computer-assisted personal interviewing (CAPI) system.

The countries covered by the survey were selected to reflect the importance of dairy production in the EU. For each country one NUTS2 region was selected, except for Spain where two regions were considered. Regions were selected to reflect the most important dairy production region(s) in the country. The sample was stratified by farm size (i.e. number of dairy cows per farm). The number of dairy cows and the number of farmers were considered to determine the sample size per strata (i.e. by farm size). The data were collected for 2016 and also, for some variables, for 2014 and 10 years ago (2006).

#### **3.1. Sample design**

The study implemented a stratified multi-stage sampling procedure with a random selection of the final sample units. Stratified sampling focuses on characteristics of particular subgroups of interest and thus facilitates comparisons between the groups. That is, the sample was stratified based on selected dairy farm characteristics.

The following steps were involved in the sample design and data collection:

1. In the first stage, the NUTS2 regions were selected.
2. In the second stage, the sampled dairy farms at local level were selected.

In the first stage, the NUTS2 regions with the highest head counts (dairy cows) and numbers of dairy holders (dairy farmers) at country level were selected, except in the cases of Poland and Spain, where the highest count of dairy cows/holders was shared by Mazowieckie and Castilla-León, respectively. The total number of cows combined with the number of holders was considered for the stratification of primary units (dairy farms). Based on these two characteristics, the distribution of primary units per stratum was determined for all five NUTS2 regions.

Once the stratification for the regions was completed, in the second stage, farms dedicated to dairy production were contacted at local level, rotating between the different contact points to ensure a random selection of dairy farmers. The procedure for contacting dairy farmers was adjusted at country level according to specific local characteristics and can be summarised as follows:

- Local agrarian offices at the municipality level (contact points) were contacted to obtain contact details for dairy farmers. In France and Germany, pre-existing databases were used to obtain farmers' contact details.
- In total, around 339 contact points (municipalities) were reached in the surveyed NUTS2 regions.
- Once the list of potential contact points was established, interviewers were randomly rotated among contact points to ensure a random selection of dairy farmers.

- Finally, the place and time of the interview (at home or at another location) was agreed with the sampled dairy farmers.

### 3.1.1. Sample design by region

The main source of regional data for the number of heads and holders used for the stratification of the sample was Eurostat, with the latest available information at regional level for 2013. This information was used to calculate the sample size; aware of potential bias resulting from outdated information, the sample design was adjusted during fieldwork whenever more recent information was available. For example, data from local statistical offices were used in France to reflect the most recent information on structure of dairy farms in the region.

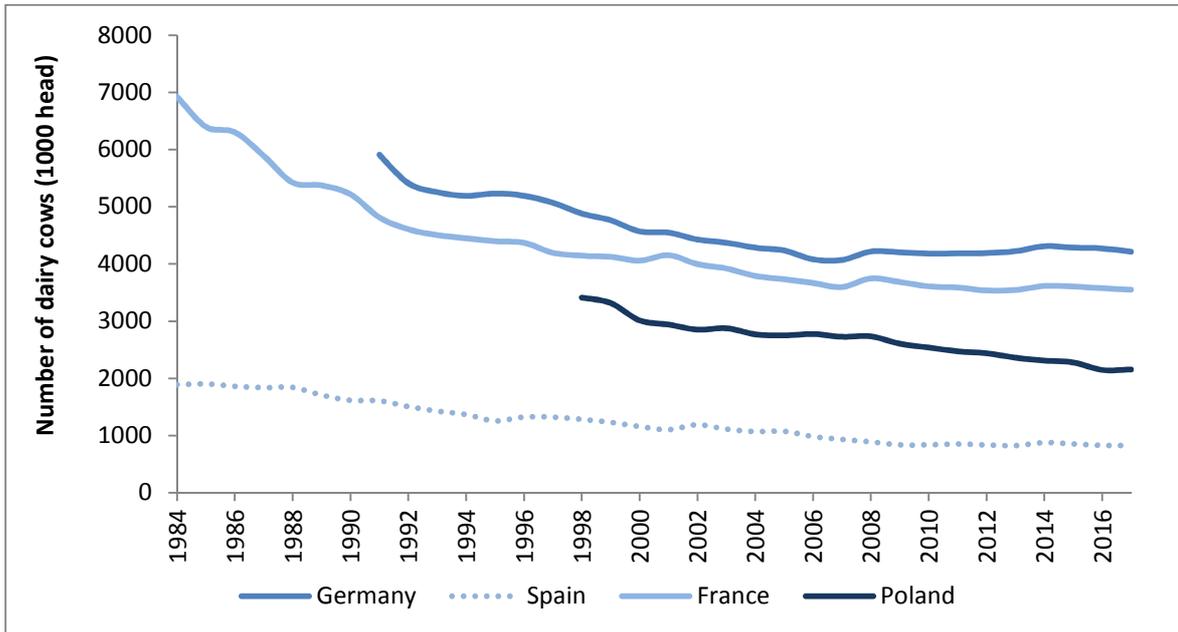
The sample stratification was based on farm size as measured by the number of heads per farm grouped according to the distribution of cattle in the surveyed regions. Farms holding fewer than 2 heads were excluded from the sample because of their low impact on the overall country-wide distribution of dairy cows.<sup>6</sup> The number of sampled farms per stratum was determined by taking the average value of two indicators: (i) the number of heads per farm as a proportion of total heads in the region and (ii) the number of holders in the region as a proportion of the total dairy farm population in the region. This procedure was chosen to take into account both the number of dairy farmers and the number of cows in the region.

Regions were chosen to reflect the regional variation in the importance of dairy production in the EU, as well as variations in context and market structure across EU regions. For example, a German region was selected for the survey because the German dairy sector is the largest in the EU. In the past decade or so, milk production in Germany has increased. The milk delivered to dairies increased on average by 1.4% annually in the period 2005–2016. The number of dairy cows was stagnant over the same period, indicating an improvement in productivity (Figure 1, Figure 2). The majority of milk produced by dairy farmers in Germany (around 67%) is delivered to processing cooperatives. For the rest of the milk deliveries (around 33%), farmers have contractual arrangements with private processors (European Commission, 2016b; Wijnands, Bijman and Tramnitzke, 2017).

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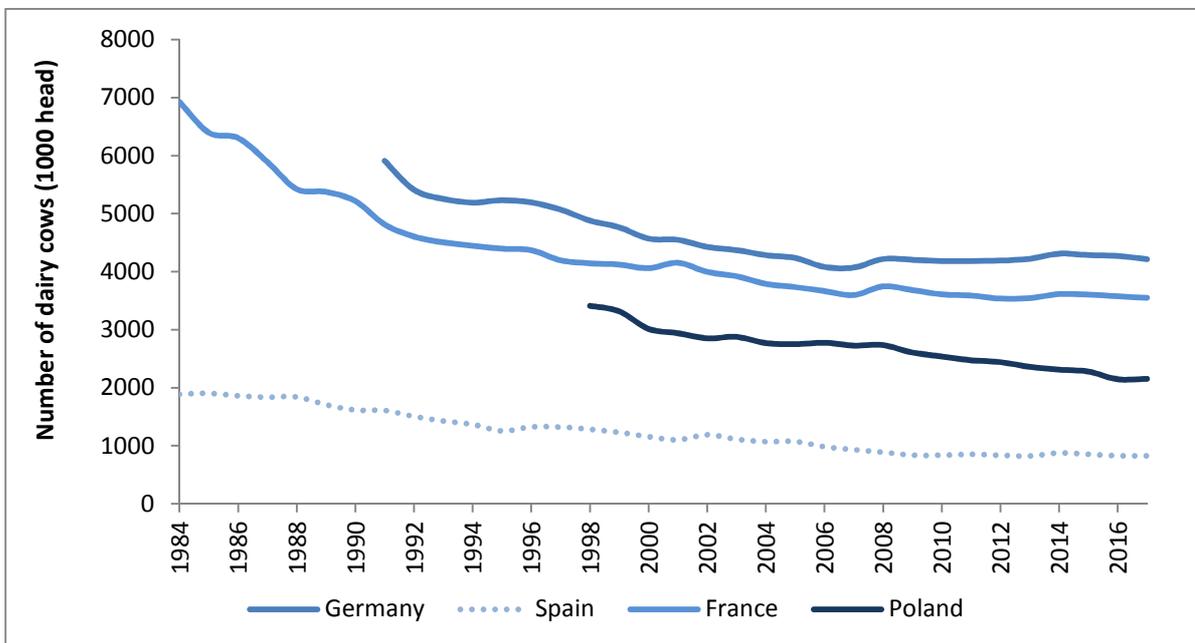
<sup>6</sup> The removal of these farms did not significantly affect the sample, given that more than 91% of dairy farms in the sampled regions had more than two cows.

**Figure 1. The evolution of milk deliveries in France, Germany, Poland and Spain (1984–2017)**



Source: Created by the authors based on Eurostat data.

**Figure 2. The evolution of the number of dairy cows in France, Germany, Poland and Spain (1984–2017)**

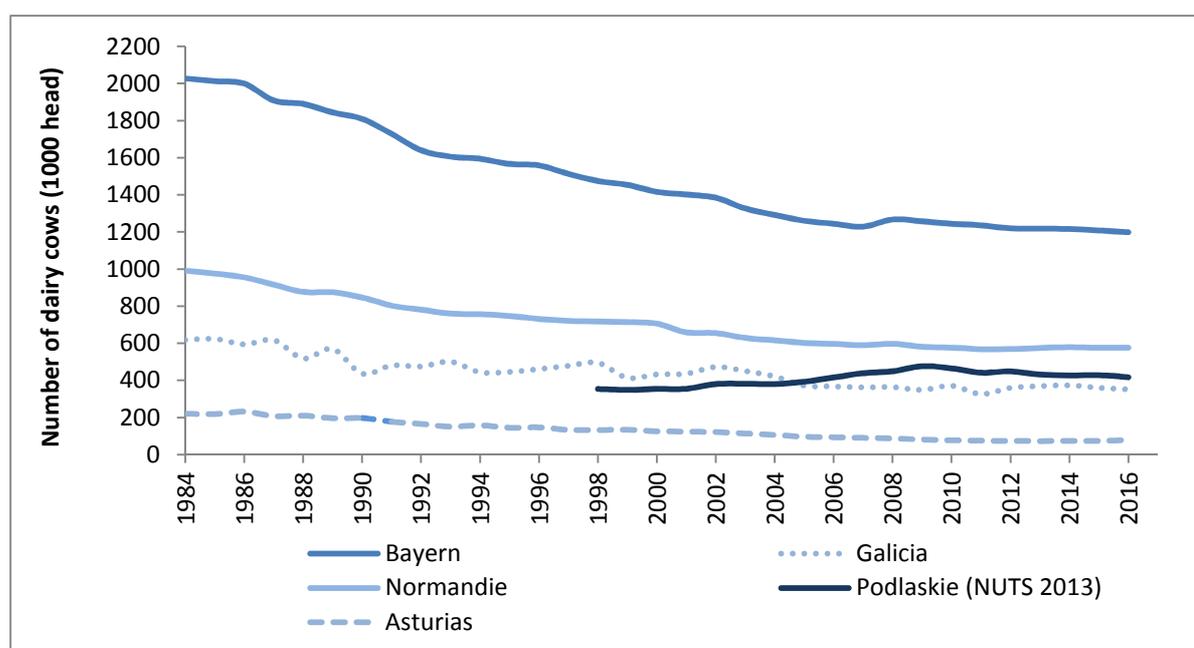


Source: Created by the authors based on Eurostat data.

In Germany, the region of Bayern was selected for the study because it is ranked first nationally using the combined number of holders and heads at regional level. Bayern accounts for almost half (48%) of the dairy cow holders in Germany. However, a downward trend in the number of cows has occurred in Bayern in the past decade (i.e. -0.6% annually in the period 2005–2016), in contrast with country-level developments (Figure 3).

Table 1 shows the distribution of the number of dairy cows and the number of holders in the total regional population and the sample size constructed based on these two indicators. Farmers with more than 100 cows are highly represented in the sample (37% of the total), followed by farmers owning between 50 and 99 cows (34%). Farmers with fewer than 50 cows but more than 19 cows represent 23%, while those with fewer than 20 cows constitute about 6% of the total sample.

**Figure 3. The evolution of the number of dairy cows in the study regions (1984–2017)**



Source: Created by the authors based on Eurostat data.

**Table 1. Sample design for Bayern**

Farm groups (no of heads per farm)	Holders		Cows		Sample	
	Abs.	%	Abs.	%	Abs.	%
3–19	3780	10.1	25,600	2.1	12	6.1
20–49	11,670	31.1	195,280	15.8	47	23.4
50–99	12,830	34.1	409,080	33.0	67	33.6
≥ 100	9300	24.7	608,980	49.2	74	37.0
Total	37,580	100.0	1,238,940	100.0	200	100.0

Source: Authors' own calculations based on Eurostat, 2013.

France is the second largest milk producer in the EU and has a rich history of dairy production. Although the number of dairy cows has continuously declined over time, the production of milk has increased in the past two decades, albeit with significant fluctuations between years (Figure 1, Figure 2). French dairy farmers deliver around half of the milk they produce (around 53%) to collecting and processing cooperatives and the other half (around 47%) to private processors (European Commission, 2016b; Wijnands, Bijman and Tramnitzke, 2017).

In France, the Normandie region (Basse and Haute) was covered by the survey. Normandie was selected because it is one of the key dairy production regions in France. Furthermore, the distribution of dairy farms is similar to that at national level. The regional trend in number of cows shows a similar pattern to that for France as a

whole. Over the period 2005–2016, heads decreased on average by around 0.5% annually in Normandie.

Table 2 shows the number of dairy cows and holders in Normandie and the aggregate figures at national level. The designed sample size is 204 dairy farms. The distribution of the sample for Normandie by farm size is reported in Table 3. Farmers with more than 50 or more but fewer than 100 cows are the most heavily represented in the sample (44%), followed by farmers owning between 20 and 49 cows (40%). Large farmers, owning 100 or more cows, represent 12% of the overall sample, while the smallest farms represents only 4% of the sample.

**Table 2. France sample design: dairy cows and holders for the sampling area**

	Holders	Cows	Sample
Basse-Normandie	9380	466,685	204
Haute-Normandie	2435	124,285	
Total Normandie	11,815	590,970	
Total France	92,540	3,737,180	

Source: Authors' own calculations based on Eurostat, 2013.

**Table 3. Sample design for Normandie**

Farm groups (no of cows per farm)	Holders		Cows		Sample	
	Abs.	%	Abs.	%	Abs.	%
3–19	1020	8.63	2780	0.47	8	3.92
20–49	960	8.12	10,650	1.80	82	40.20
50–99	1830	15.48	52,560	8.89	89	43.63
≥ 100	8010	67.77	524,990	88.83	25	12.25
Total	11,820	100.00	590,980	100.00	204	100.00

Source: Authors' own calculations based on Eurostat, 2013.

Spain is another important milk-producing country in the EU. After a period of stagnation, the country experienced upward growth; on average in the period 2005–2016 milk deliveries to dairies grew by around 1.3% per year. Similarly to France, the number of dairy cows has continuously decreased, although at a higher rate than in France, particularly in the past decade. On average, the number of cows decreased in Spain by around 2% per year, compared with 0.5% in France, during the period 2005–2016 (Figure 1, Figure 2).

Spanish dairy farmers deliver the smallest share of milk produced (around 35%) to collecting and processing cooperatives, compared with the other countries covered by the survey. The remainder (around 65%) is delivered to private processors or through other contractual arrangements (European Commission, 2016b; Wijnands, Bijman and Tramnitzke, 2017).

Of the 17 Spanish NUTS2 regions, Galicia was selected because it ranks first in terms of numbers of cows and holders. Similarly, Asturias was selected because of the particular structure of its dairy sector. The trend in cow numbers in the two regions follows a similar pattern to that at national level with, however, a stronger decline observed in Asturias than in Galicia: on average, a –2.3% and a –1.3% annual decline, respectively, during the period 2005–2016 (Figure 3).

**Table 4. Spain sample design: dairy cows and holders by selected NUTS2 regions**

Spain	Holders	Cows	Sample
Galicia	12,570	346,220	
Asturias	2920	81,550	500
Total sampling area	15,490	427,770	
Total for Spain	23,530	876,070	

Source: Authors' own calculations based on Eurostat, 2013.

The two selected regions together cover 61% of total dairy cow holders at national level and about half (48.8%) of all the dairy farms in Spain. The distribution of interviews (405) between the two selected regions was set proportionally to the final weight of each region with regard to the total numbers of dairy cows and holders.

The sample constructions for Galicia and Asturias are reported in Table 5 and Table 6, respectively. The highest represented farm groups in the sample are dairy farms with a number of cows between 20 and 49 or between 50 and 99 in Galicia (each group forms around 30% of the total sample) and between 3 and 19 cows or between 20 and 49 cows in Asturias (each group forms around 28% of the total sample). The smallest represented farms in the sample are large farms in both regions (those with 100 or more cows per farm).

**Table 5. Sample design for Galicia**

Farm groups (no of cows per farm)	Holders		Cows		Sample	
	Abs.	%	Abs.	%	Abs.	%
3–19	2920	25.55	20950	6.08	86	21.23
20–49	4630	40.51	94470	27.40	123	30.37
50–99	2600	22.75	105040	30.46	125	30.86
≥ 100	1280	11.20	124360	36.07	71	17.53
Total	11430	100.00	344820	100.00	405	100.00

Source: Authors' own calculations based on Eurostat, 2013.

**Table 6. Sample design for Asturias**

Farm groups (no of cows per farm)	Holders		Cows		Sample	
	Abs.	%	Abs.	%	Abs.	%
3–19	630	23.08	2350	2.89	28	28.00
20–49	1060	38.83	20780	25.55	29	29.00
50–99	610	22.34	25680	31.57	21	21.00
≥ 100	430	15.75	32530	39.99	22	22.00
Total	2730	100.00	81340	100.00	100	100.00

Source: Authors' own calculations based on Eurostat, 2013.

Milk production is one of the most important agricultural sectors in Poland. Dairy production accounted for more than 20% of the overall value of agricultural production in 2013. In the past decade, the trends in milk production and cow numbers have diverged significantly in the country: while production has expanded, the number of dairy cows has decreased dramatically. On average, milk deliveries increased by 2.2% while the number of dairy cows fell by 2.1% per year during the period 2006–2016 (Figure 1, Figure 2). The majority of milk produced by Polish dairy farmers (around 75%) goes to collecting and processing cooperatives. Milk delivered to private

processors represents 25% of the total produced in Poland (European Commission, 2016b; Wijnands, Bijman and Tramnitzke, 2017).

Podlaskie was selected for this study because it is one of the largest dairy production regions in Poland. In contrast to the national trend, cow numbers showed an upwards trend to 2009, followed by a decline in the subsequent period (Figure 3).

The distribution of the sample by farm size is reported in Table 7. In contrast to the other four regions considered in this study, Podlaskie is dominated to a large extent by small dairy farms. Small dairy farms (between 3 and 19 cows per farm) represent around 36% of in the total sample. Large farms (with 100 or more cows per farm) constitute the smallest share (5%), while the two farm classes considered “middle size” (20–49 and 50–99) together account for around 49% of the total.

**Table 7. Sample design for Podlaskie**

Farm groups (no of cows per farm)	Holders		Cows		Sample	
	Abs.	%	Abs.	%	Abs.	%
3–19	13,690	46.16	61,430	14.09	120	35.82
20–49	11,280	38.03	191,810	44.01	132	39.40
50–99	4050	13.65	136,060	31.22	67	20.00
≥ 100	640	2.16	46,570	10.68	16	4.78
Total	29,660	100.00	435,870	100.00	335	100.00

Source: Authors’ own calculations based on Eurostat, 2013.

### 3.1.2. Sampling approach

The study aimed to conduct a total of 1300 interviews, at least 210 per country. The final sample obtained comprises 1248 interviews. The sample distribution by country is reported in Table 8.

The data collection process involved the following steps:

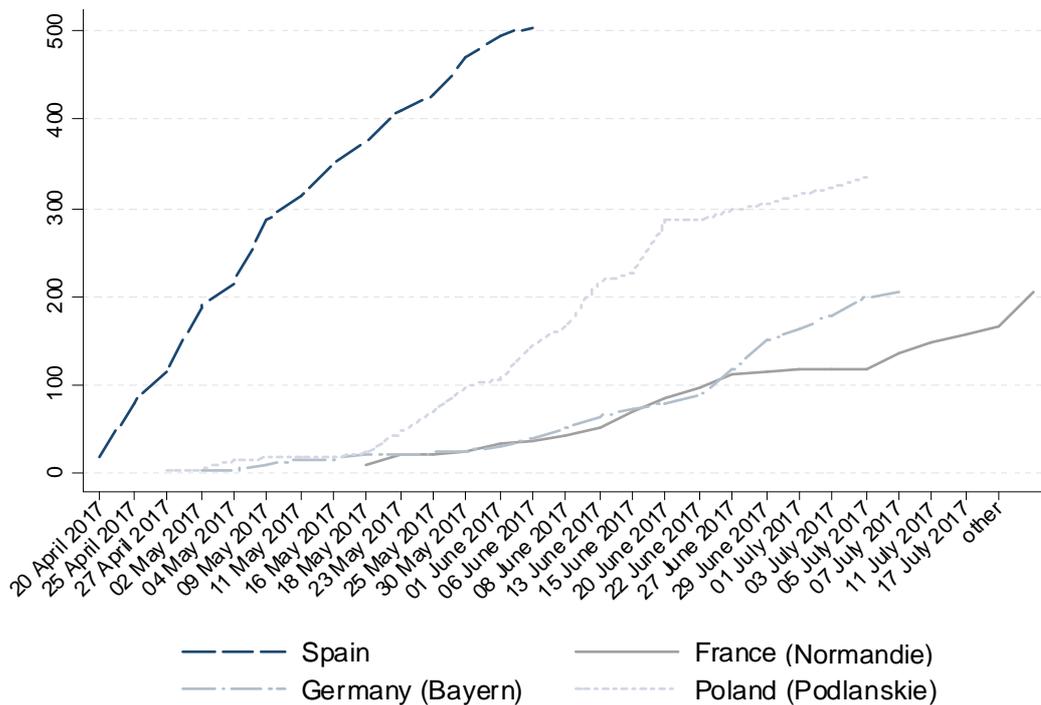
1. **Testing of the questionnaire – pre-piloting (Q test).** In this phase, 30 interviews were conducted across the different regions as follows: 10 in Spain, 10 in Poland, 5 in France and 5 in Germany. The 30 dairy farms were selected to account for different farm sizes. The aim of pre-piloting was to evaluate the feasibility of conducting the interviews in local languages and to test the comprehensiveness and understanding of the questionnaire.
2. **Pilot phase.** In this phase, 70 interviews were carried out as follows: 30 in Spain, 20 in Poland, 10 in France and 10 in Germany. The aim of this second pilot testing was to evaluate whether the questionnaire set-up (filters, question rotations, quality consistency controls, translations, etc.) had been performed correctly according to the initial instructions.
3. **Main fieldwork.** The selection of dairy farmers (contact point, questionnaire routines and data maps) for the sample differed depending on the country. In Spain and Poland, the contact points were obtained from the local agrarian offices. In France and Germany, the contact points were retrieved from the available statistical information and databases. To ensure wide sample dispersion, a maximum of 10 interviews were arranged per contact point. Data collection was executed by a total of 36 interviewers – 2 in France, 9 in Germany, 6 in Poland and 19 in Spain – coordinated by 1 fieldwork director and 1 supervisor per country. The average time taken to complete the questionnaire was 78 minutes. The fieldwork lasted from 20 April until 1 August 2017. Figure 4 shows a graphical representation of the fieldwork progress by country.

**Table 8. Total sample by country**

Country	Main sample
France	204
Germany	204
Poland	335
Spain	505
Total	1248

Source: Created by the authors.

**Figure 4. Fieldwork progress**



Source: Created by the authors based on information from TNS.

### 3.1.3. Sampling errors

The sampling error was calculated based on a multi-strata probability approach, that is, the calculation of the first stratum, given by the ratio between the country and the total number of interviews, and the calculation of the second stratum based on the probability of the selected farmer being a resident of a particular stratum. The second stratum probability was calculated as the ratio between the number of farmers in this stratum and the total number of farmers in the country.

As the sample was obtained by aggregating different sub-samples, the calculation of the associated sampling error must also be deduced from the aggregation of sampling errors for each country and stratum (Table 9).

**Table 9. Estimation of the sampling error**

Country (target region)	Sample size	Sampling error for a confidence interval (2 $\delta$ ), at country level	Composition of sampling error for a confidence interval (2 $\delta$ ) at global level
Germany	205	±6.8%	2.04%
France	205	±6.8%	0.77%
Poland	335	±5.5%	1.07%
Spain	505	±4.3%	1.21%
Total	1248		±3.95%

Source: Created by the authors.

The resulting sampling error for the whole sample was calculated, and its level is within the commonly accepted limits of error for socio-economic research, at less than 10% for a significance level of 95.5%. The individual figures for the composite sampling error index calculated for the global index cannot be taken separately. These formulas are unbiased in sampling with replacement, meaning that a farmer can be replaced by an identically characterized farmer. In our case, involving sampling without replacement, despite the randomness with which farmers were selected for interview, there was a certain degree of bias, although it is very small because of the size of the population considered and the sample size.

It should also be noted that the calculation of the sampling error associated with our sample design took the regions included in the sample as 100% of the geographical scope of the demographic group. In the regions covered by the study, a large majority of dairy farms in each country were excluded, and therefore a degree of bias is to be expected, although this is also very small, as the number of holders discarded in most countries was minimal.

### 3.2. Questionnaire

The questionnaire was developed based on previous analysis carried out as part of the COMPETE project.<sup>7</sup> The questionnaire was centred on the following three main aspects:

1. capturing the contractual arrangements present in the dairy sector;
2. investigating the presence of UTPs in the contract content and in different phases of the contract development;
3. comparing the performance of the dairy sector across EU countries in order to identify circumstances in which UTPs are more likely.

Standard principles of survey design were used to establish a conceptual basis for the questionnaire before the specific questions were designed, and, furthermore, a literature review of studies on the types of UTPs in the food supply chain and the contractual arrangements of dairy farmers was conducted before the questionnaire was designed. As a result, the following main elements were addressed by questions included in the questionnaire:

1. farm characteristics;
2. dairy production characteristics;
3. contract characteristics;

<sup>7</sup> COMPETE project: International comparisons of product supply chains in the agro-food sectors: determinants of their competitiveness and performance on EU and international markets (<http://www.compete-project.eu>).

#### 4. UTPs.

The first version of the questionnaire was pre-piloted in Galicia to establish its face validity. During this phase, four observers (two from TNS, one interviewer and one representative of the Joint Research Centre) attended the interviews. Comments from the four external observers taking part in the survey were used to adjust the questionnaire (e.g. rewording the questions, adding more questions). The questionnaire was conducted using a tablet and with software developed for this purpose. This allowed the interviewed farmers to easily follow the questions and automatically answer the relevant ones.

In their answers to several questions, respondents were asked to provide responses for three different periods, namely 2016, 2014 and 10 years ago. The rationale behind this approach was to assess the trends in the issues raised by the questions as well as to potentially capture the effects of the abolition of the milk quota.

### 3.3. Sample weights

The purpose of sample weights is (i) to derive survey statistics representative of the underlying population or (ii) to compensate for over- or under-sampling of specific cases or for disproportionate stratification. The two most common types of weighting system are (i) design weights and (ii) post-stratification or non-response weights.

The design weight corrects for differences in respondents' selection probabilities, making the sample more representative of a "true" sample of individuals in a given area. The design weight is usually used to compensate for over- or under-sampling of specific cases or for disproportionate stratifications. The design weights are calculated as the normalized inverse of the selection probabilities. That is, the weight is calculated as the inverse of the sampling fraction of each respondent included in the survey (Johnson, 2008; Fotini, Evangelia and Michai, 2013).

Conversely, the post-stratification weight aims to minimize the difference between population parameters and the realized sample characteristics. It is generally used to compensate for the variation in response likelihood between respondent types. Calculating the post-stratification weight is normally more difficult than constructing design weights, as it requires the use of auxiliary information about the population to reduce the sampling error and potential non-response bias (PEAS, 2009; ESS, 2014).

In this study, we used the post-stratification weight. The reason for this was that the survey tended to over-represent large and under-represent small farmers. As auxiliary information for calculating the post-stratification weight we used the most recent census on the number of dairy holders and cows, available from Eurostat. We used these weights to calculate the survey results reported in the following sections.

The post-stratification weight for each region considered in the survey was calculated as follows (see also the example in Table 10):

1. calculating the ratio of the number of dairy holders belonging to a certain farm size group (i.e. in terms of number of cows) to the total number of dairy holders, using population data from Eurostat;
2. calculating the ratio of the number of dairy holders belonging to a certain farm size group (i.e. in terms of number of cows) to the total number of dairy holders for the survey data;
3. dividing the first ratio by the second ratio.

**Table 10. Example of calculation of post-stratification weight**

Farm size (no of cows)	Number of holders		Weight
	Eurostat	Sample	
3–19	2920	20,950	1.203
20–49	4630	94,470	1.334
50–99	2600	105,040	0.737
≥ 100	1280	124,360	0.639
<b>Total</b>	<b>11,430</b>	<b>344,820</b>	<b>1.000</b>

## 4. Farm characteristics and dairy production

### 4.1 Farm characteristics

Bayern is the EU's leading milk-producing region, with a long tradition in the dairy sector going back more than three centuries. The activity is generally passed down from generation to generation and carried out mainly by family farms. Similarly, in Podlaskie and both Spanish regions (Galicia and Asturias), more than 90% of farms are family farms. In Normandie, however, this does not appear to be the rule of thumb. Individual family farming in this region constitutes only 20%, whereas the majority of dairy holders take the form of private corporations (81%). In addition, in Normandie 97% of farming activity is combined with other activities, predominantly cultivation of arable crops (e.g. cereals). Conversely, in Asturias, more than 77% of farmers are exclusively dedicated to dairy and meat production (18%). Notwithstanding, in all the five regions the manager of the dairy farm is almost always a family member; in Normandie, 22% are hired labour managers. Managers usually work exclusively and full time for the farm, except in Bayern, where 7% of managers work part time.

Figure 5 shows the population pyramid of dairy managers across the five regions. In the majority of cases, farm management is carried out by a man, with men representing, on average, 76% of the overall sample. The average age of head farmers ranges between 43 and 48 years for men and between 45 and 54 years for women. The highest shares of female managers are found in the two Spanish regions. Women leading dairy farms represent 32% and 27% in Galicia and Asturias, respectively, while in the other regions they constitute less than 28%, with Bayern having only 8% of farms managed by women.

The level of education attained by managers (heads of farms) is another element that differs across regions. The majority of managers in Galicia and Asturias have primary education, at 55% and 53% of surveyed farmers, respectively. In other regions, the vast majority of managers have reached at least secondary education. Normandie has the highest share of managers with a higher degree, at 8%, and the majority of them are female. In Bayern, 21% of managers have received vocational training, particularly women (61% of female managers). This region also has the highest share of managers with a university degree (73%). In Podlaskie, it appears that most managers have secondary education or vocational training (42% in both cases) (Table 11).

It is interesting to see how the composition of unpaid family labour differs across regions. Overall, across all regions, 83% of farms use unpaid family labour (i.e. the spouse of the head of the farm and/or other family members, excluding the head of the farm). Podlaskie has the highest share of farms using unpaid family labour, with the spouse of the head of the farm and/or other family members working on 99% of surveyed farms, followed by Bayern (91%), Asturias (76%), Galicia (76%) and Normandie (65%). Regarding paid labour, 32% of all surveyed farms used permanent or seasonal hired workers. This varies among regions, from 16% in Asturias to 68% in Normandie.<sup>8</sup>

Another significant difference between regions appears in relation to labour cost. On average in 2016 in Galicia a hired worker cost about EUR 56 per day, while in Asturias the cost was EUR37 per day. This is almost double in the remaining regions, ranging between EUR 94 per day in Normandie and EUR 110 per day in Bayern.<sup>9</sup> The labour costs declared for 2016 do not diverge significantly from those for 10 years ago,

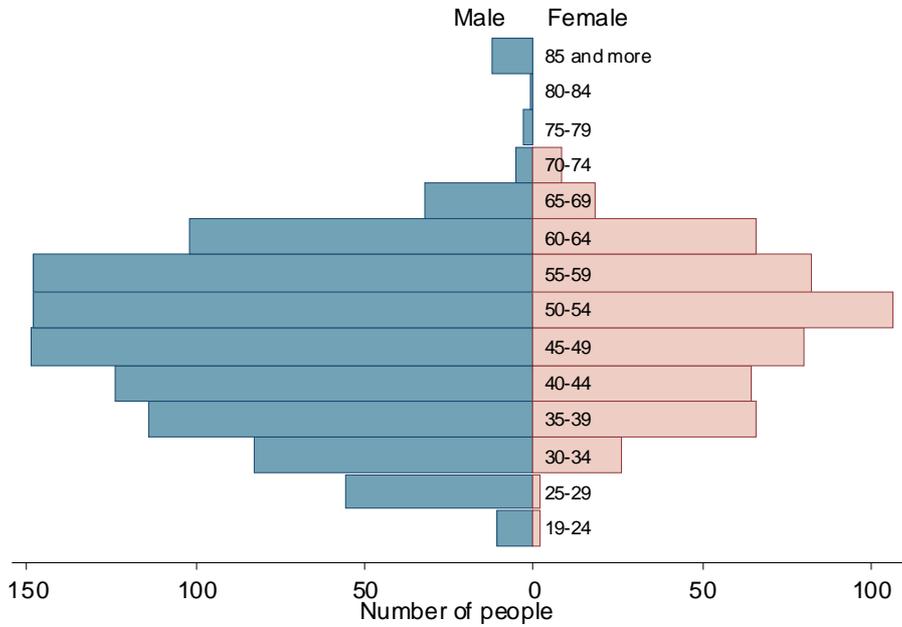
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<sup>8</sup> Note that 48% of surveyed farmers did not respond to the question on hired labour use.

<sup>9</sup> The results indicating high labour costs in Podlaskie are likely to reflect the low rate of responses to this question.

except in Podlaskie and Normandie, where they increased on average by EUR 34 and EUR 29, respectively. Note that the majority of surveyed farmers from Podlaskie and Normandie (96% and 70%, respectively), as with the question on paid labour, did not respond to this question, implying that the labour cost for these regions may not be representative.

**Figure 5. Population pyramid of dairy managers in surveyed regions**



Source: Created by the authors based on survey data.

**Table 11. Education level of farm managers by gender and region (% of respondents)**

	Galicia	Asturias	Normandie	Bayern	Podlaskie	Total
Male						
Primary or below (< 16 years)	55	53	2	0	6	24
Secondary (16–18 years)	21	25	48	5	42	29
University (19–22 years)	5	2	23	74	10	20
Higher	1	2	8	0	0	2
Vocational training (16–18 years)	18	18	19	21	42	25
Female						
Primary or below (< 16 years)	69	67	2	0	9	39
Secondary (16–18 years)	15	11	35	0	37	23
University (19–22 years)	4	3	21	39	16	12
Higher	1	3	9	0	0	2
Vocational training (16–18 years)	11	16	33	61	38	25
Total						
Primary or below (< 16 years)	55	53	2	0	6	24
Secondary (16–18 years)	21	25	48	5	42	29
University (19–22 years)	5	2	23	74	10	20
Higher	1	2	8	0	0	2
Vocational training (16–18 years)	18	18	19	21	42	25

Source: Created by the authors based on survey data.

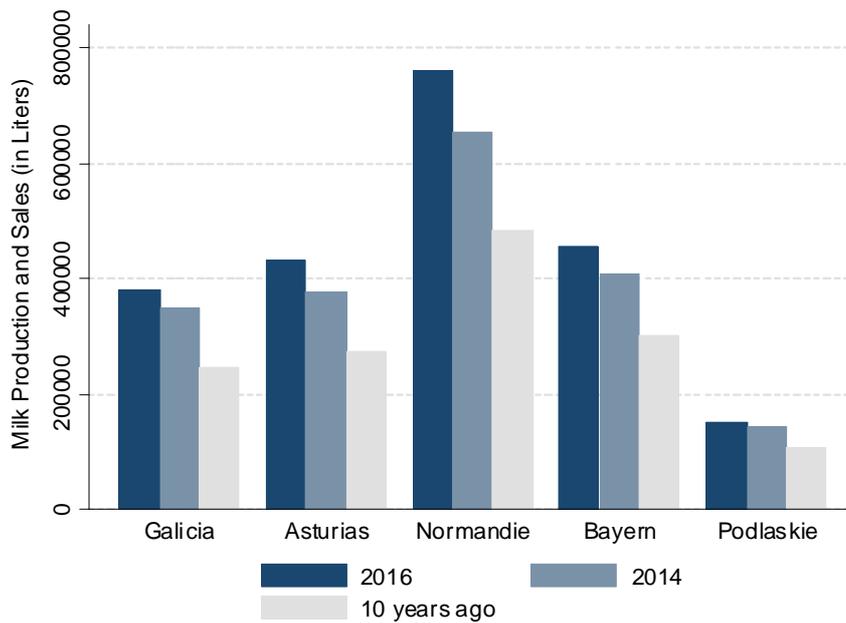
Additional intra-regional differences appear when comparing land use. On average in Galicia and Asturias the share of farmland that is grassland and land cultivated with fodder is around 56% and 40%, respectively. In other regions, grassland represents less than 45% of all agricultural land, while the remaining agricultural land is allocated to fodder cultivation and non-dairy-related activities.

It is quite uncommon for farmers in the studied regions to own agricultural land, except in Podlaskie, where about 70% of the sampled farmers own the land they use. In all of the other regions, more than 80% of land is rented.

## 4.2 Milk production and types of milk buyer

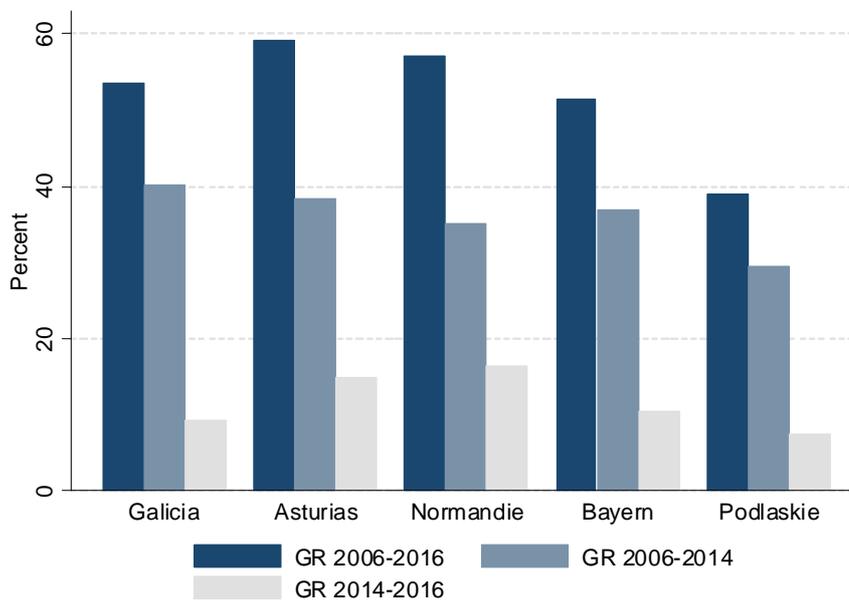
In the five studied regions, the production of cow's milk follows the same general upward trend as at MS level. As Figure 6 shows, the level of milk production over the three different periods increased, albeit to different extents, in all five regions. Variations in regions' production development reflect farming practices, market structure and development, as well as the level of integration along the dairy chain. The largest volume of milk produced from the five studied regions was in Normandie (763 million litres), followed by Bayern (455 million), Asturias (435 million), Galicia (381 million) and Podlaskie (153 million). The highest growth rate compared with 10 years ago occurred in Asturias (59%), while Podlaskie grew less quickly, at 39%. On average across the five regions the milk delivered to dairies had increased by 50% in 2016 compared with 10 years ago. By comparison, the milk delivered to dairies rose by an average of 36% in 2006 compared with 2014 (pre-quota period). Galicia and Asturias saw deliveries of milk increase the most among the five studied regions during the same period: by 40% and 38%, respectively (Figure 7).

**Figure 6. Milk production**



Source: Created by the authors based on survey data.

**Figure 7. Milk production growth**

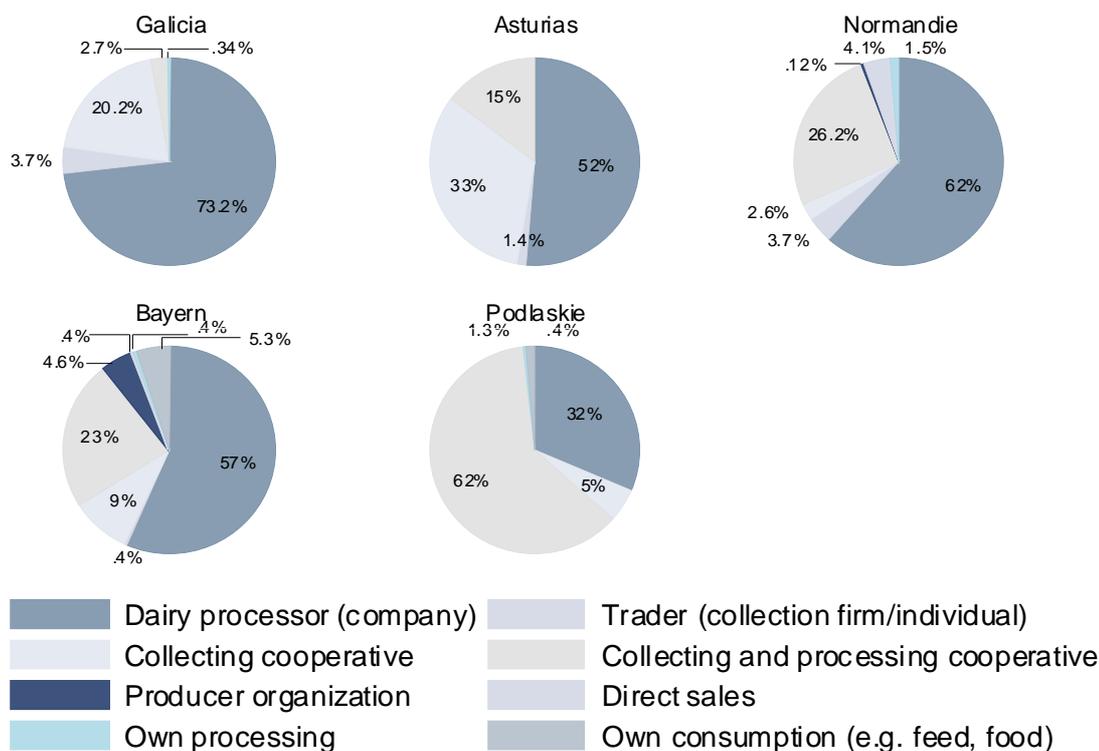


Source: Created by the authors based on survey data.

Figure 8 shows the distribution of farmers' milk deliveries by type of buyer in the five studied regions. In Galicia, Normandie, Bayern and Asturias, the majority of surveyed farmers delivered their milk to processing companies (73%, 62%, 57% and 52%, respectively), while in Podlaskie the majority of farmers (62%) delivered to collecting or processing cooperatives. Collecting or processing cooperatives were also important

buyers of farm milk in Normandie (26%) and Bayern (23%), while collective cooperative are the second most important buyers in Asturias (33%). In general, the type of main buyer has not changed over time in any of the five regions.

**Figure 8. Distribution of farmers' milk deliveries to milk buyers in 2016 (percentages of types of buyer)**



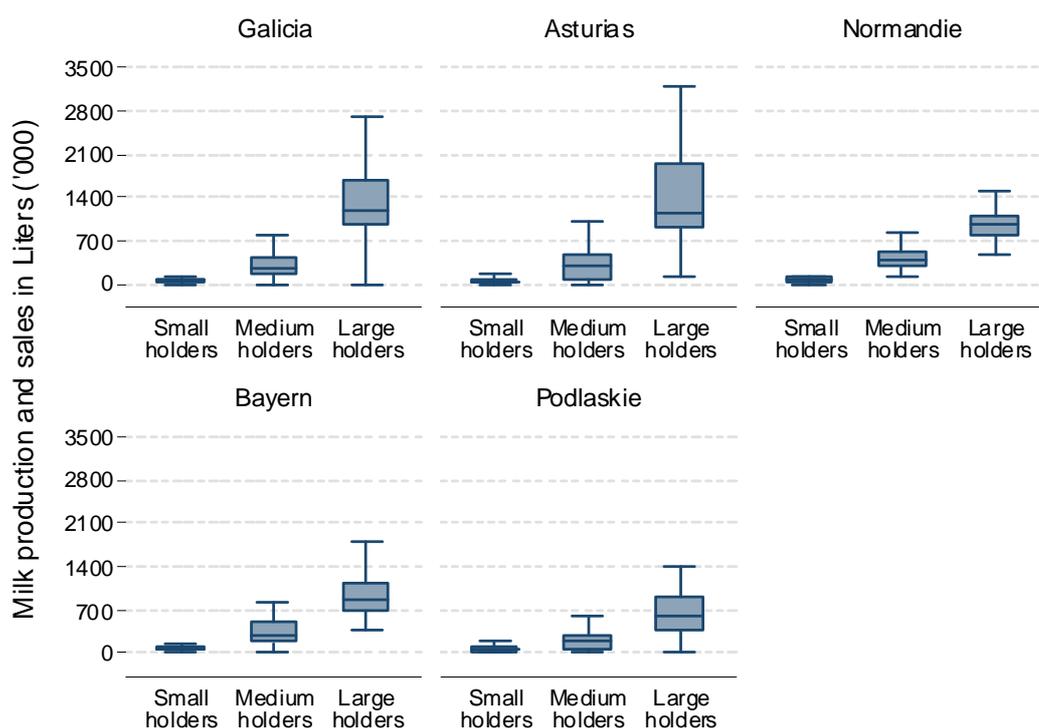
Source: Created by the authors based on survey data.

The concentration of milk buyers differs in each of the five studied regions. In Galicia, for instance, there were about 60 different buyers that had contractual arrangements with surveyed dairy farmers in 2016. The two main buyers purchased from only 15% and 11% of the surveyed farmers in this region. Similarly, the concentration of milk buyers is low in Bayern. In this region, there are more than 60 different buyers collecting milk and only two largest buyers collect from less than 10% of surveyed farmers. The main buyer in Bayern accounts for 7% of surveyed farmers. The distribution of farmers' milk deliveries is more concentrated in Asturias, where the majority of surveyed farmers (67%) deliver the milk to one buyer, and the second main buyer accounts for about 16%. The majority of these farms are medium-sized holders (43%), while small farmers represent only 12% of those delivering to this company. In Normandie, the sector is relatively concentrated. The three main buyers collected milk from 68%, 45% and 33%, respectively, of surveyed farmers in the region. In Podlaskie, half of the surveyed dairy farmers deliver to the same buyer, while the remaining farmers are spread among another 16 buyers, the largest of which collects milk from 13% of all surveyed farmers.

Figure 9 shows the distribution of milk delivered by farm size group, that is, small holders (farmers with 3–19 cows), medium holders (farmers with 20–99 cows) and

large holders (farmers with 100 or more cows). The boxplots<sup>10</sup> for Asturias and Galicia show positive skews of deliveries for large farms, meaning that the quantities of milk delivered by those below the median are closer together than the quantities of those delivering higher quantities. In both cases, the 25 percentile is about 1,000,000 litres. However, in Asturias the deliveries are even more spread out, with farmers delivering up to 3,000,000 litres. In Normandie, Bayern and Podlaskie, there is no significant difference in milk quantity deliveries across the three classes. The central tendency (median values) ranges from 600,000 to 1,200,000 litres without significant variation across regions.

**Figure 9. Milk production by farm size**



Source: Created by the authors based on survey data.

### 4.3 Milk prices

Figure 10 shows the evolution of raw cow's milk prices in MS covered by this study and at EU level for the period 1977–2016. The prices exhibit seasonal fluctuations, although in 2007 there was a visible increase. Fluctuations in milk prices increased after 2007. Milk prices in Poland gradually converged on the EU price level after the country's accession to the EU in 2004. From 2008 to 2009, milk prices across the five EU MS showed a reverse downward trend. Milk prices went up again in the following periods, although the quota system was still in place. The elimination of dairy quotas in April 2015 coincided with a downward trend in milk prices. The fall in milk prices by 36% between December 2013 and July 2016 was of a similar magnitude to that during the period January 2008 and May 2009, when prices fell by 37%.

<sup>10</sup> The box represented in the boxplot's figure extends from the 25th percentile to the 75th percentile of milk production per farm. The 50th percentile (median) is drawn (with a horizontal line) inside the box. The whiskers above and below each box give additional information about the spread of the data; they represent the minimum and maximum values within a given farm size group.

The milk price developments at country level depicted in Figure 10 are in line with figures from our survey. Figure 11 shows the milk prices received by surveyed farmers in September 2006 (i.e. 10 years ago)<sup>11</sup> and in September 2016. The average milk price in September 2006 varied between EUR 0.34 and EUR 0.38 per litre across the five studied regions, except for Podlaskie, where the average price was EUR 0.27. In September 2016 the average milk price in Galicia, Bayern and Normandie was approximately EUR 0.30 per litre, while in Asturias and Podlaskie the price was EUR 0.35 and EUR 0.32, respectively. For comparison, the milk prices at national level as reported in Figure 10 were EUR 0.30, EUR 0.27, EUR 0.31 and EUR 0.26 per litre<sup>12</sup> in Spain, Germany, France and Poland, respectively.

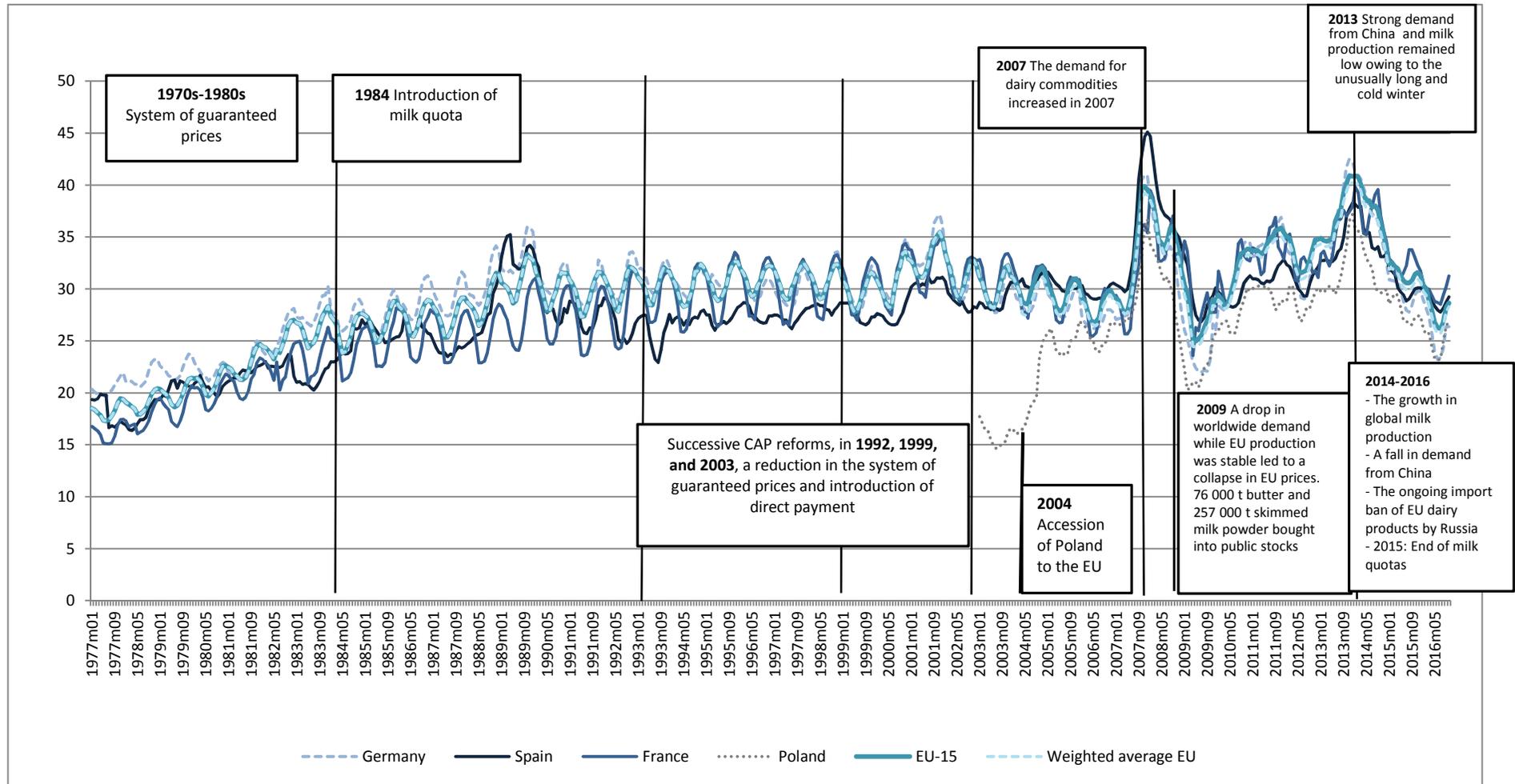
On average, the milk price received by farmers had decreased in all regions by September 2016 compared with 10 years ago, with the exception of Podlaskie. Bayern and Galicia experienced the largest average milk price reduction during this period (EUR 0.07 and EUR 0.08 per litre, respectively) compared with the other regions. On the other hand, in Podlaskie, the milk price received by farmers had increased by September 2016 compared with 10 years ago. On average, the price received by surveyed farmers in Podlaskie in September 2016 was almost EUR 0.06 per litre higher than 10 years ago. In addition, price differences in Podlaskie were much more spread out than in other regions (Figure 11).

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<sup>11</sup> Note that information on milk prices received in 2006 was reported by only around one third of surveyed farmers.

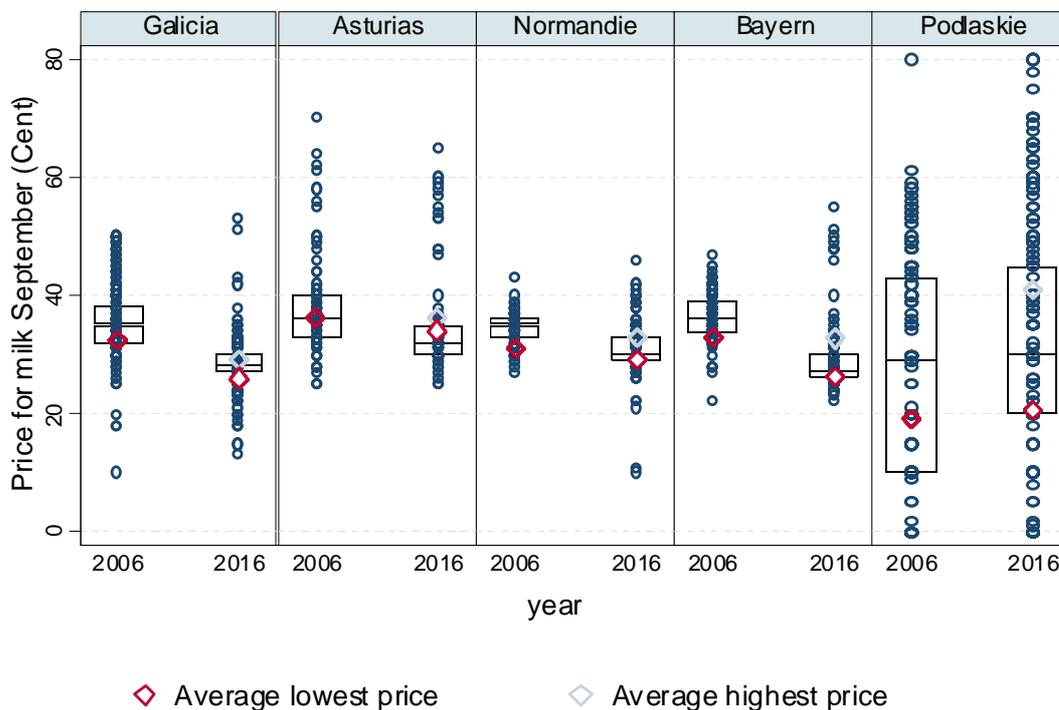
<sup>12</sup> We used a conversion rate of 1.03 kilograms/litre to convert the national milk prices reported in Figure 10 from per kilogram to per litre.

**Figure 10. Historical evolution of EU raw cow's milk prices (cents per 1 kg, 1977–2016)**



Source: EU Milk Market Observatory, Directorate-General for Agriculture and Rural Development, European Commission.

**Figure 11. Milk prices across the surveyed regions (cents per litre, 2006 and 2016)**



Source: Created by the authors based on survey data.

#### 4.4 Farmers' business relationship with the main milk buyer

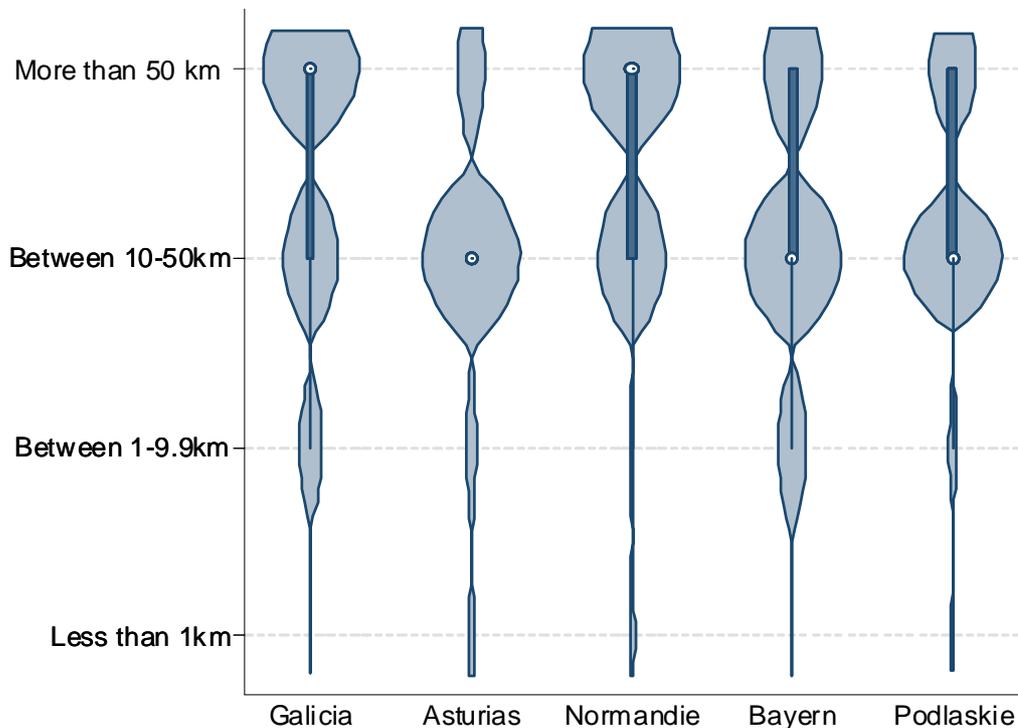
With the exception of farmers in Galicia, more than half of surveyed farmers in the studied regions declared a business relationship with their main milk buyer of more than 20 years' standing. This was particularly true in Asturias, where more than two fifths of the overall sample had a long-term relationship (more than 20 years) with their main milk buyer. By contrast, in Galicia only 30% of sampled farmers reported a similarly long relationship with their main milk buyer. Of these farmers, 22% had a long relationship with the two largest milk buyers in the region; of the remaining farmers, 43% stated that they had had a relationship with the same buyer for less than 20 years but more than 5 years, and 27% declared that they had started a relationship with the main buyer only recently. In Asturias, 40% of interviewed farmers had a long-term relationship with the two largest buyers in the region, and in Normandie 17% had one with the three largest milk buyers, while in Podlaskie 28% of surveyed farmers had a long relationship with the two largest buyers. However, this pattern was not observed in Bayern, where farmers' long-term business relationships were spread among different milk buyers operating in the region.

Figure 12 shows the distribution of the distance of surveyed farmers from the main buyer in 2016.<sup>13</sup> The thickness of the outer shape indicates the frequency of the result. According to the figure, farmers in Galicia and Normandie tend to be located further from the main buyer than farmers in the other three regions. Around 57% and 55% of the

<sup>13</sup> The circles (indicating the mean) and the bold vertical line (indicating the distance between the mean and the median) are shifted up in Bayern and Podlaskie compared with Galicia and Normandie. For the former two regions, this means that the mean distance is greater than the median. For Asturias, the bold vertical line is not shown because in this case the mean is similar to the median.

surveyed farmers are located more than 50 km from their main buyer in Normandie and Galicia, respectively. The distance of the rest of farmers in these two regions is less than 50 km. In Asturias, the vast majority of farmers (71%) are between 10 and 50 km from their main buyers. In Bayern and Podlaskie, more than half of producers are located between 10 and 50 km away.

**Figure 12. Distribution of the distance of surveyed farmers from their main buyer (2016)**



Source: Created by the authors based on survey data.

Note: The marker indicates the median of the data, the box indicates the interquartile range (IQR), and the spikes extend to the upper- and lower-adjacent values (i.e. the largest and smallest observation that is lower/greater than or equal to the upper/lower quartile  $\pm 1.5 \times$  IQR).

On average, only 24% of the surveyed farmers across all five study regions considered changing their main buyer. There are, however, substantial differences between regions. Whereas in Asturias and Podlaskie about 13% and 3% of dairy farmers respectively would prefer to have a different main buyer from their current one, in Galicia and Bayern this rises to around 40%. In Normandie, this figure is close to the total sample average, at 26%.

Table 12 lists a number of barriers faced by surveyed farmers who considered changing their main buyer. That is, the table reports the results for 24% of surveyed farmers across all five study regions. Although Galicia has a relatively large number of buyers, the majority of them are located more than 50 km from surveyed farmers. This is perceived as a constraint on changing the main buyer (i.e. there is a lack of other dairies in the neighbourhood) by 46% of surveyed farmers. The main barrier (60%) in Asturias is the difficulty of obtaining better conditions with new buyers, which may be caused by a market structure that means that there is a relatively high concentration of milk buyers. Other important barriers in Asturias are the requirement to become a member of a new cooperative/producer organization and the possibility that other buyers might not be

willing to purchase all the milk that farmers want to sell. One interesting result occurs in Normandie, where the majority of farmers considering changing their main buyer (i.e. 27% of those surveyed) found the written contract to be the main obstacle (i.e. 75% of surveyed farmers who considered changing buyer). This is also reported as an important barrier in Bayern (48%) and, to a lesser extent, in Asturias and Podlaskie (about 33%). In Bayern, the written contract and the requirement to become a member of a new cooperative/producer organization are equally discouraging to farmers who want to change the main buyer, similarly to the situation in Asturias. In Podlaskie, where only 3% of the surveyed farmers said that they were considering a change of buyer, the risk posed by cooperating with a new dairy buyer was cited as an important obstacle.

**Table 12. Barriers to changing the main milk buyer (% of surveyed farmers who considered changing buyer)**

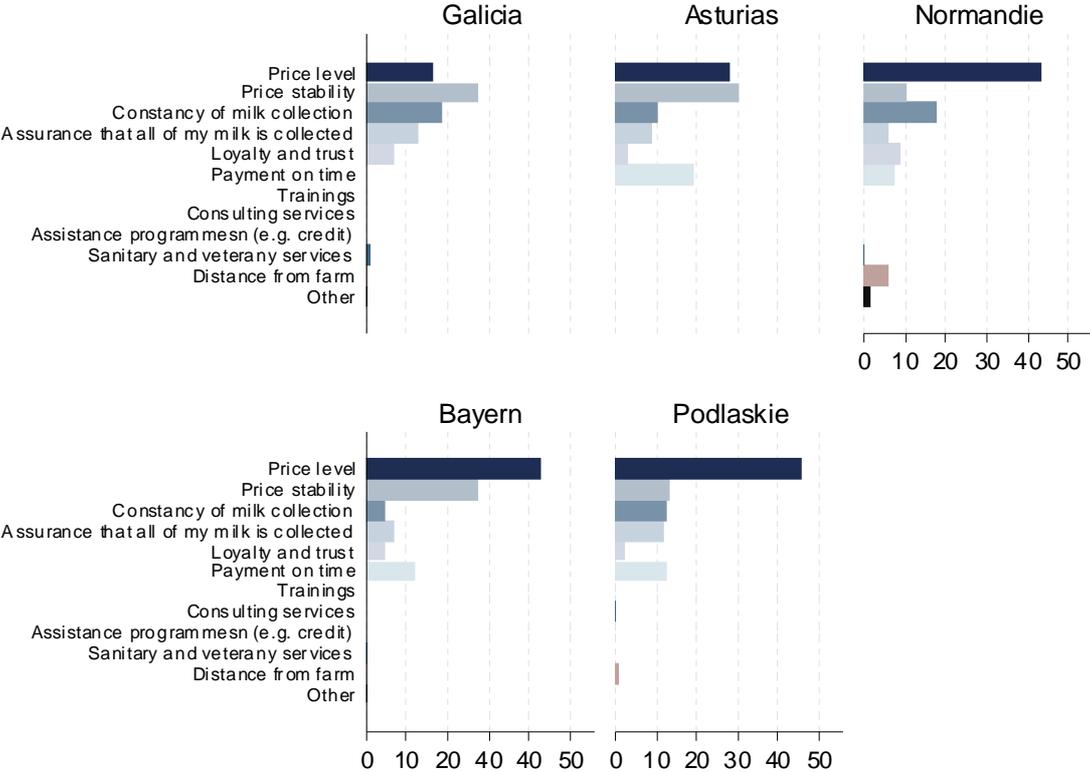
	Galicia	Asturias	Normandie	Bayern	Podlaskie
1: Written contract	26.5	33.2	74.9	48.0	33.8
2: Lack of other dairies in the neighbourhood	45.8	21.2	39.7	23.7	5.1
3: Membership shares would be paid with (long) delay	32.2	26.9	4.3	23.4	1.9
4: I would not get such good conditions anywhere else	37.7	59.7	48.2	30.4	26.8
5: I have credit from the dairy	2.6	6.4	0.3	0.0	4.2
6: I have credit from a bank which is guaranteed by the dairy	0.6	4.5	0.3	0.0	3.0
7: Risk of cooperation with a new dairy	37.4	30.2	8.1	22.5	30.6
8: Higher milk quality requirements	16.7	6.8	26.9	10.9	6.6
9: The dairy is too far from my farm	16.4	9.1	18.5	17.1	8.7
10: Other dairies do not collect milk from the farm	16.0	36.3	31.6	12.6	1.8
11: I would be required to build a new business network with a local partner	10.2	38.4	34.6	20.1	26.5
12: I would need to become a member of a new cooperative/producer organization	18.2	55.2	26.8	48.1	27.6
13: Other dairies are not reliable	31.8	23.8	13.9	3.7	1.8
14: Other dairies are not willing to collect all my milk	19.4	43.5	10.0	5.8	0.5
15: There are other support measures – I would have to account for them	26.1	21.4	1.6	0.0	22.7
16: Other	16.8	30.3	2.1	6.3	0.0

Source: Authors' calculations based on survey data.

Because the majority of farmers are not concerned about changing their buyer, it is interesting to look at the factors that tie dairy farmers to their main buyer. Figure 13 lists the most important reasons why farmers maintain their relationship with the main buyer. Farmers were asked to rank the 3 most important reasons from 12 options.<sup>14</sup> There is relatively high homogeneity among the surveyed regions, with either price level or price stability reported to be the most important reason for maintaining the relationship. These two reasons were selected by 30% and 23% of all surveyed farmers, respectively. These were followed by the constancy of milk collection and the assurance that all the milk will be collected by the buyer, which were chosen by 17% and 15% of all surveyed farmers, respectively.

<sup>14</sup> Note that Figure 13 does not include two reasons for maintaining the relationship with the main buyer – training needs and assistance programmes (e.g. credit, inputs) – because none of the surveyed farmers selected these as important.

**Figure 13. First and most important reasons for maintaining the relationship with the main milk buyer (% of surveyed farmers)**



Source: Created by the authors based on survey data.

### 5. Contractual arrangements

A written contract regulates the relationship between commercial partners by establishing conditions under which a product, in this case milk, will be delivered (e.g. price, quality) during the contract. The specification of a large number of provisions and contingencies in the contract brings a number of advantages, such as the avoidance of potential disputes or misunderstandings regarding delivery terms during contract execution. However, because of uncertainty about the future or unobservable and unverifiable actions, not all events can be anticipated, which is why many contracts are incomplete and postpone the resolution of unforeseen situations (e.g. disputes) until a later date.

The vast majority of surveyed farms in the study regions have a written contract with the main buyer, either as an individual contract (55% of all surveyed farmers) or with a cooperative or producer organization (26% of surveyed farmers). The exception is Asturias, where most farmers have informal contractual arrangements. Although here the use of informal arrangements has reduced over time (i.e. compared with 10 years ago), 76% of surveyed farmers still do not have formal contract with their main buyer. In Bayern, many farmers (69%) have a contract with a cooperative/producer organization rather than individual contracts, which are common in Podlaskie, Galicia and Normandie (Table 13). It is worth noting that in Galicia 70% of farmers declared that they had a different type of contract in each of the three periods covered in the survey (i.e. 2016, 2014 and 10 years ago), while in Podlaskie 79% of farmers reported no change in the type of contract across the three periods.

**Table 13. Type of contract surveyed farmers have with their main buyer (% of surveyed farmers)**

	Galicia		Asturias		Normandie		Bayern		Podlaskie	
	2016	Δ 2016- 10 years ago	2016	Δ 2016- 10 years ago	2016	Δ 2016- 10 years ago	2016	Δ 2016- 10 years ago	2016	Δ 2016- 10 years ago
Individual contract	70.2	▲ 406%	13.6	▲ 56%	46.5	▲ 158%	22.1	▲ 14%	75.1	▲ 2%
Contract with cooperative/producer organization	17.8	▲ 91.0%	8.9	▲ 48%	14.1	▲ 1463%	69.0	▼ -5%	21.8	▼ -2%
Both individual contract and with coop/producer organization	1.7	▲ 115%	1.8	▲ 147%	19.3	▲ 414%	3.6	■ 0%	0.8	▼ -14%
Oral agreement	2.6	▼ -92%	1.5	▼ -77%	3.9	▼ -57%	1.6	▲ 14%	0.8	■ -47%
No contract	7.7	▼ -83%	74.1	▼ -5%	16.3	▼ -76%	3.8	▲ 18%	1.5	▼ -14%

Source: Authors' calculations based on survey data.

Table 14 and Table 15 attempt to measure the completeness of farmers' contracts with the main buyer by providing statistics on the number of elements of milk delivery arrangements explicitly specified in the written contract. Of a total of 18 elements, on average contracts explicitly specify around five different milk delivery arrangements across the five regions, namely 6.9 elements in Galicia, 6.2 in Normandie, 6 in Bayern, 4.4 in Asturias and 3.7 in Podlaskie (Table 14). The most common elements specified are milk quality testing (67% of surveyed farmers with a written contract), duration of contract (64%), milk price (63%), timing of payments (59%) and premiums for higher milk quality (58%). The rest of the elements are included in written contracts for fewer than 50% of all surveyed farmers who have one (Table 15).

Unlike in other regions, contracts in Normandie are generally extended automatically (80% of surveyed farmers with a written contract). In this region, almost all farmers with a written contract have a milk quality testing arrangement specified in the contract (90%). Furthermore, it is common in Normandie for the contract duration and the timing of payments to be set (this is true for around four fifths of farmers with a written contract). Discretion of the buyer in refusing or adjusting milk delivery is quite limited in all five regions (between 7% and 30% of surveyed farmers with a written contract), but it is more common than the option for farmers to exercise the same right (between 2% and 22%). Similarly, penalties if farmers fail to deliver are more frequently specified in written contracts (between 11% and 54% of surveyed farmers with a written contract) than safeguards if the buyer fails to fulfil the contract terms (between 0% and 15%). Regarding contract cancellation terms, in total 38% of farmers with a written contract have these specified in their contract, mainly in Bayern, Normandie and Podlaskie (Table 15).

**Table 14. Average number of elements set in the contract with the main buyer**

	Galicia	Asturias	Normandie	Bayern	Podlaskie	Total
Average number of elements set in the contract (out of a total of 18)	6.9	4.4	6.2	6	3.7	5.6

Source: Authors' calculations based on survey data.

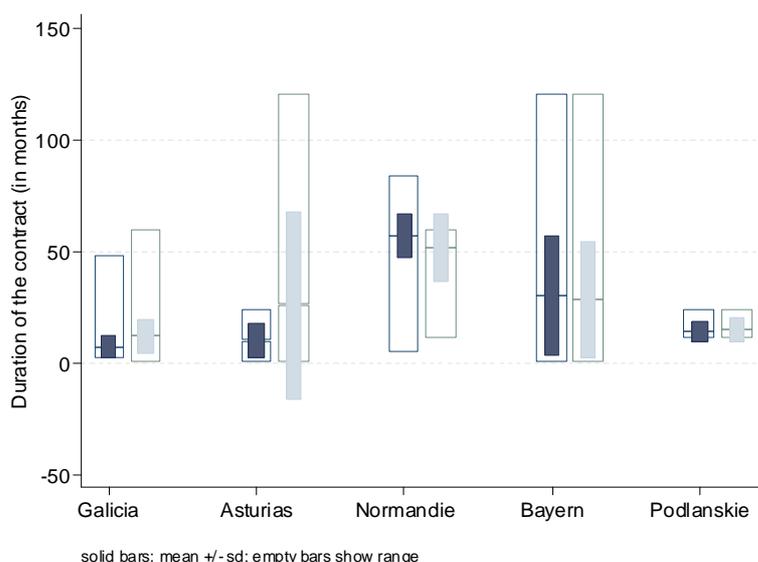
**Table 15. Milk delivery arrangements set in the contract with the main buyer (% of surveyed farmers with a written contract, *N* = 1114)**

	Galicia	Asturias	Normandie	Bayern	Podlaskie	Total
1. Duration	85.9	50.3	82.2	67.1	29.3	64.1
2. Automatic extension	18.5	24.7	79.8	51.7	45.1	42.1
3. Milk price	93.0	63.2	47.9	21.0	60.7	62.7
4. Premiums for higher milk quality	87.7	74.4	40.4	42.9	40.9	57.9
5. Timing of payments	60.8	22.1	76.0	72.3	43.1	59.0
6. Milk quantity is defined in the contract	69.8	36.0	54.1	9.1	18.9	40.4
7. Penalties if farmer fails to deliver	54.2	20.8	43.2	29.4	10.9	34.2
8. Buyer can refuse or adjust milk delivery	25.9	18.9	11.2	29.5	6.6	18.3
9. You (or farm organization/cooperative) can refuse or adjust milk delivery conditions	9.9	4.1	2.0	22.4	1.8	8.3
10. Dispute resolution mechanism	13.3	7.3	20.8	23.7	18.9	17.9
11. Obligation to invest in dairy production	1.7	0.0	0.8	2.0	1.3	1.4
12. Imposition of marketing/supply constraints	6.7	2.8	41.2	21.2	0.8	12.8
13. Milk quality testing	74.9	31.8	90.0	67.7	47.3	66.7
14. Safeguard if the buyer fails to fulfil contract terms	13.9	0.0	11.0	14.6	5.4	10.7
15. Terms for contract cancellation	26.3	9.6	41.0	59.3	37.4	37.5
16. Consultancy services	7.7	11.0	4.4	25.3	5.5	9.8
17. Direct or indirect funding	2.9	14.2	0.6	4.1	1.0	2.5
18. Sanitary and veterinary services	12.3	23.5	1.1	29.9	2.2	10.9

Source: Authors' calculations based on survey data.

Figure 14 shows the duration of contracts in the five surveyed regions for two periods, 2006 and 2016. The lower and upper edges of the boxes in the figure represent the minimum and maximum duration of contracts, respectively. The horizontal lines express the mean duration. The solid bars show one standard deviation of the contract duration from the mean. The figure also compares two periods: 2016 (dark blue) and 10 years ago (light blue). The average duration of a contract in 2016 was 58 months in Normandie, 30 months in Bayern, 14 months in Podlaskie, and 9 months in Asturias and Galicia. Compared with 10 years ago, in 2016 contracts were significantly shorter in Galicia and Asturias (by 4 and 18 months, respectively), while in Normandie they were 8 months longer. By contrast, in Bayern and Podlaskie no significant changes were observed in contract duration over time. We observe that in Asturias, Bayern and Podlaskie (although in Podlaskie the variation is relatively small) the distribution tends to be skewed towards contracts longer than the average. In Normandie, the reverse is true: the distribution is slightly skewed towards contracts shorter than the average.

**Figure 14. Duration of the contract with the main buyer (number of months)**



Source: Created by the authors based on survey data.

Notes: The boxes show the minimum and maximum duration of the contract, while the horizontal line shows the mean duration. The solid bars correspond to one standard deviation from the mean. The dark blue colour corresponds to 2016 and the light blue to 10 years ago.

Differences in contract duration between farm size classes are relatively significant. In 2016, the average duration of contracts for small farmers was 14 months across all five study regions. The longest contract for small farmers was 55 months. Medium-sized farmers had on average a contract of 18 months, with a range from 1 month to 120 months. In contrast, the average contract duration for large farmers was 41 months. Asturias is the only region where we observed the opposite difference in contract length between small and large farms. In this region, small farmers have established long relationships with their main purchasers. On average, small farmers have contracts that last for about 2 years, as opposed to medium and larger farmers, who set up contracts for less than 1 year.

Another key element of written contracts is milk price. However, the way that milk price is established varies across regions. In principle, price can be defined as fixed or by a predefined formula. It can also be undefined, meaning that it is negotiated during contract execution. As reported in Table 16, milk price is rarely fixed, with the exception of Galicia, where a substantial share of farmers with a written contract (31%) have their milk price fixed. In Normandie, Bayern and Podlaskie, prices vary based on a predefined formula – for 60%, 59% and 58% of surveyed farmers with a written contract, respectively – while in a significant share of contracts in Galicia the price is either set on the basis of milk quality (55%) or set unilaterally by the buyer (50%).<sup>15</sup> In Asturias, the quality and quantity of milk delivered is a significant determinant of the price set in the contract (46%); furthermore, in 40% of cases the price is set unilaterally by the buyer. In Bayern, a significant share of farmers (45%) have prices negotiated during the contract. Compared with 10 years ago there are no significant differences in how prices are established, with the exception of price quality, which seems a much more predominant factor in 2016 than it was 10 years ago.

<sup>15</sup> Note that in some cases price is set based on multiple criteria such as quality, spot price and quantity. As a result, the sum of all components reported in Table 16 is not 100%.

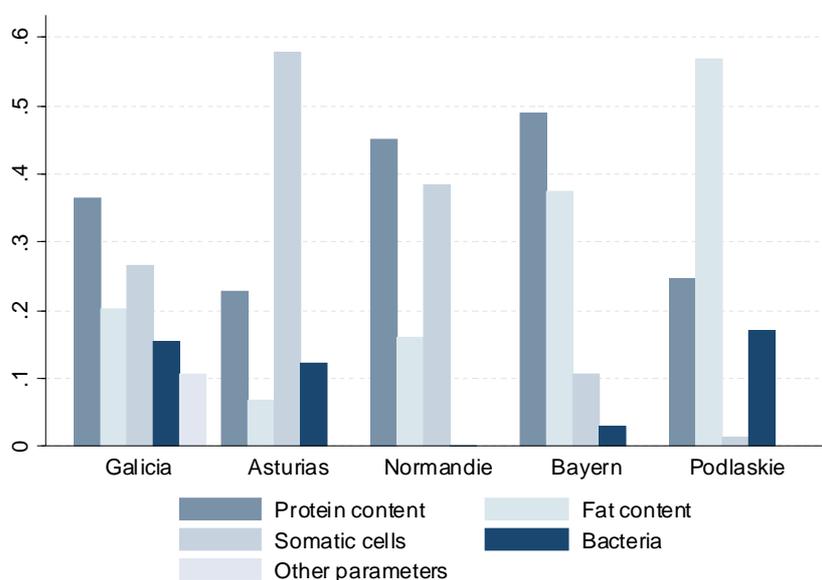
**Table 16. Milk price setting across regions with the main buyer (% of surveyed farmers with a written contract)**

	Galicia	Asturias	Normandie	Bayern	Podlaskie	Total
Price is fixed	30.6	9.4	1.1	15.4	1.6	17.2
Price is variable based on predefined formula	28.9	25.6	60.3	58.6	57.9	42.8
Price is based on spot market	34.3	45.9	41.9	5.8	7.0	25.8
Price is based on production costs	4.0	4.4	8.1	1.9	1.5	3.7
Price is based on delivered quality	54.9	45.5	26.6	55.7	14.3	39.5
Price is based on delivered quantity	29.7	45.5	15.5	21.1	29.2	27.7
Price is negotiated during contract execution	8.1	6.5	9.2	45.1	1.0	8.3
Price is set unilaterally by the buyer	49.7	40.4	3.0	8.7	12.5	30.6
Price is set unilaterally by the farmer	1.1	4.4	0.0	0.0	0.6	0.8
Other	0.9	13.0	1.1	0.0	0.0	0.9

Source: Authors' calculations based on survey data.

The most common parameter for price setting is protein content (36%), followed by fat content (30%), somatic cells (21%) and bacteria (12%) (Figure 15).<sup>16</sup> However, as shown in Figure 15, these parameters are not equally important in all five surveyed regions. For instance, whereas in Bayern and Normandie protein content is the most important parameter for price setting – for more than half of farmers with a written contract – in Podlaskie it is fat content. On the other hand, somatic cells are the main parameter in Asturias. In contrast, in Galicia there is no dominant parameter for milk price setting.

**Figure 15. Parameters for price setting with the main buyer (% of surveyed farmers with price set in the contract)**

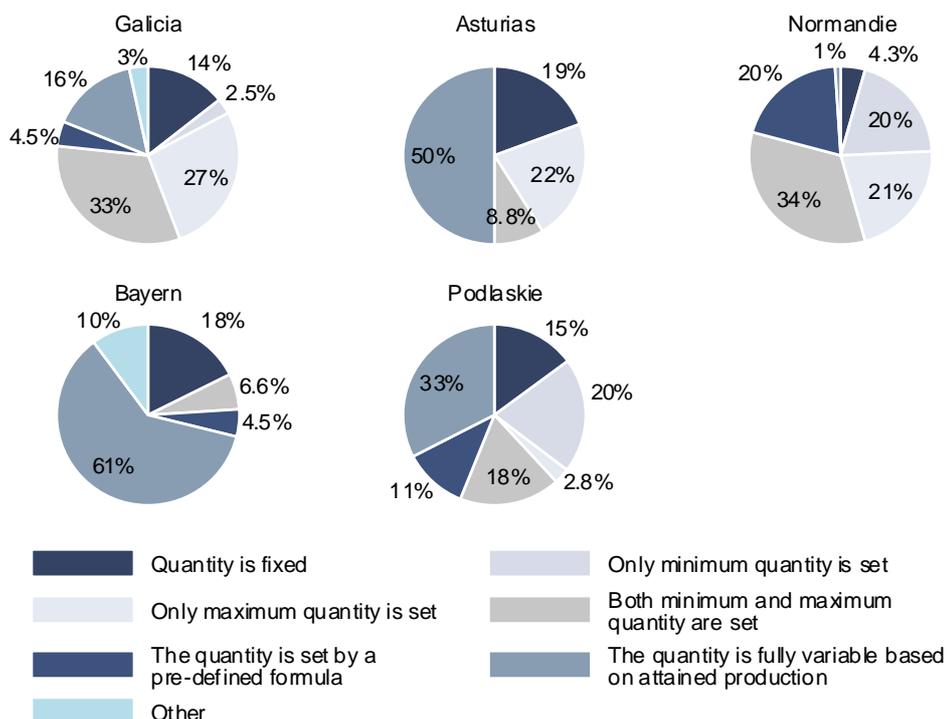


Source: Created by the authors based on survey data.

<sup>16</sup> The percentages in Figure 15 were calculated on the basis of the total number of farmers with a written contract and prices set in the contract, that is 63% of all surveyed farmers across all surveyed regions.

Figure 16 shows the different ways in which milk quantity is set in the contract.<sup>17</sup> In most cases, quantity is fully variable based on attained production. However, this does not appear to be the standard rule in Normandie, where almost 35% of farmers have the minimum and maximum quantities set in their contract. Similarly, in Galicia either minimum and maximum quantities or minimum quantity only are established in the majority of contracts. In Bayern, the quantity is fully variable in most cases; however, for about 10% of farmers with a contract the way in which quantity is set is not specified.

**Figure 16. Contractual setting of milk quantity with the main buyer (% of surveyed farmers with quantity set in the contract)**

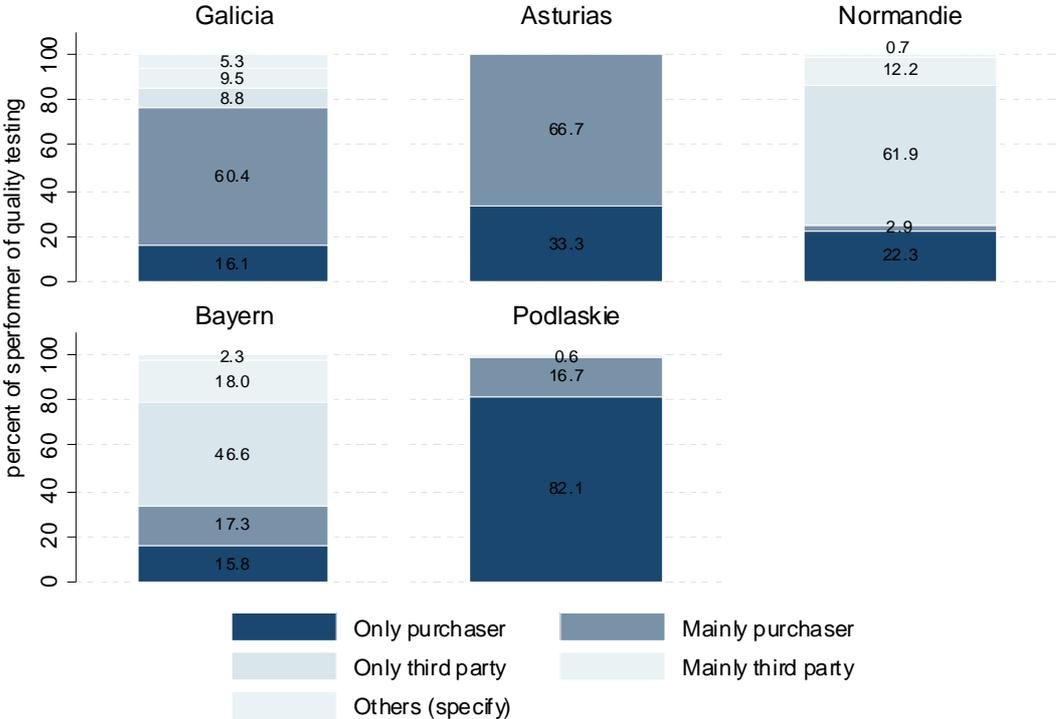


Source: Created by the authors based on survey data.

Most contracts (67% of all surveyed farmers) establish who is in charge of conducting quality testing of delivered milk. The testing is done mainly by the buyers in the two Spanish regions, in the case of more than 60% of surveyed farmers with milk quality testing specified in their contract. This aspect is particularly important in Podlaskie, where, for 82% of farmers who have milk quality testing specified in their contract, the testing is done exclusively by the buyer. The situation is different in Normandie and Bayern, where, for 85% and 65% of farmers, respectively, their milk deliveries are subject to third-party quality testing (Figure 17).

<sup>17</sup> Farmers with quantity set in the contract constitute 40% of all farmers across the five regions.

**Figure 17. Milk quality testing arrangements with the main buyer (% of surveyed farmers with milk quality testing specified in the contract)**



Source: Created by the authors based on survey data.

### 5.1 Contract negotiation

Contract negotiation is the process through which parties agree on contractual terms. Factors such as bargaining power, asymmetric information, transaction costs, tolerance of risk and the potential for moral hazard determine the negotiation strategy. For example, a player with bargaining power might be able to impose contract terms rather than negotiate them with the trading partner.

The survey results show that about 30% of farmers negotiate the contract with the main buyer. This figure varies across regions and over time. Among the study regions, the largest shares of farmers who negotiated the contract with the main buyer in 2016 were reported in Bayern and Galicia (around 43% of cases in each region), followed by Asturias (30%), Normandie (19%) and Podlaskie (15%). There was no substantial difference in the contract negotiation pattern between 2014 and 2016. It seems that in Asturias farmers have lost the negotiating power that they had 10 years ago. In contrast, in Normandie this power had increased in 2016 compared with 10 years ago (Table 17).

In Podlaskie, almost all farmers who reported that they had negotiated the contract in 2016 stated that they had negotiated it by themselves. In Galicia and Asturias, 65% and 90% of the farmers were able to negotiate the contract with the main buyer by themselves. In Bayern, the majority of surveyed farmers who negotiated the contract did so through a cooperative or producer organization (84%). Collective negotiation also occurred in Galicia and Normandie, representing between 26% and 66% of the farmers who negotiated their contract. We did not observe significant changes in the negotiation pattern over time, except in Asturias, where there has been a shift from individual negotiation towards collective negotiation (cooperative or producer organization). A small shift had occurred in Podlaskie, where the share of farmers with individual negotiation

had increased from 91% 10 years ago to 98% in 2016. The role of cooperative or producer organizations in contract negotiation remains unimportant in Podlaskie (Table 18).

**Table 17. Share of farmers who negotiated contract terms with the main buyer (% of surveyed farmers with a written contract)**

		Share of farmers with a written contract (%)	Standard error	95% confidence interval	
2016	Galicia	43.1	3.4	36.5	49.9
	Asturias	28.8	9.9	13.5	51.1
	Normandie	18.9	5.2	10.7	31.3
	Bayern	43.0	3.5	36.2	50.0
	Podlaskie	15.4	2.2	11.6	20.1
	Total	30.7	1.7	27.5	34.1
2014	Galicia	41.8	3.4	35.3	48.7
	Asturias	29.9	10.0	14.3	52.1
	Normandie	6.4	3.3	2.3	16.6
	Bayern	42.1	3.5	35.4	49.2
	Podlaskie	15.4	2.2	11.6	20.1
	Total	29.2	1.6	26.1	32.6
10 years ago	Galicia	44.5	3.4	37.9	51.4
	Asturias	40.1	10.7	21.8	61.7
	Normandie	6.4	3.3	2.3	16.6
	Bayern	43.1	3.5	36.4	50.2
	Podlaskie	12.4	2.0	9.0	16.8
	Total	29.4	1.6	26.3	32.8

Source: Authors' calculations based on survey data.

**Table 18. Actors that negotiated the farmer's contract with the main buyer (% of surveyed farmers who negotiated the contract)**

	Galicia	Asturias	Normandie	Bayern	Podlaskie	Total
2016						
Negotiated by me	65.7	90.0	32.0	6.0	98.4	52.7
Negotiated through a cooperative/producer organization	26.1	10.0	66.0	84.3	0.0	41.1
Negotiated by me and through a cooperative/producer organization	8.2	0.0	2.0	9.6	1.6	6.2
2014						
Negotiated by me	61.1	80.0	34.9	7.3	98.3	51.1
Negotiated through a cooperative/producer organization	28.6	10.0	65.1	82.9	0.0	41.7
Negotiated by me and through a cooperative/producer organization	10.3	10.0	0.0	9.8	1.7	7.2
10 years ago						
Negotiated by me	69.2	77.8	75.0	8.2	91.4	51.3
Negotiated through a cooperative/producer organization	19.8	11.1	25.0	82.4	5.7	40.3
Negotiated by me and through a cooperative/producer organization	11.0	11.1	0.0	9.4	2.9	8.5

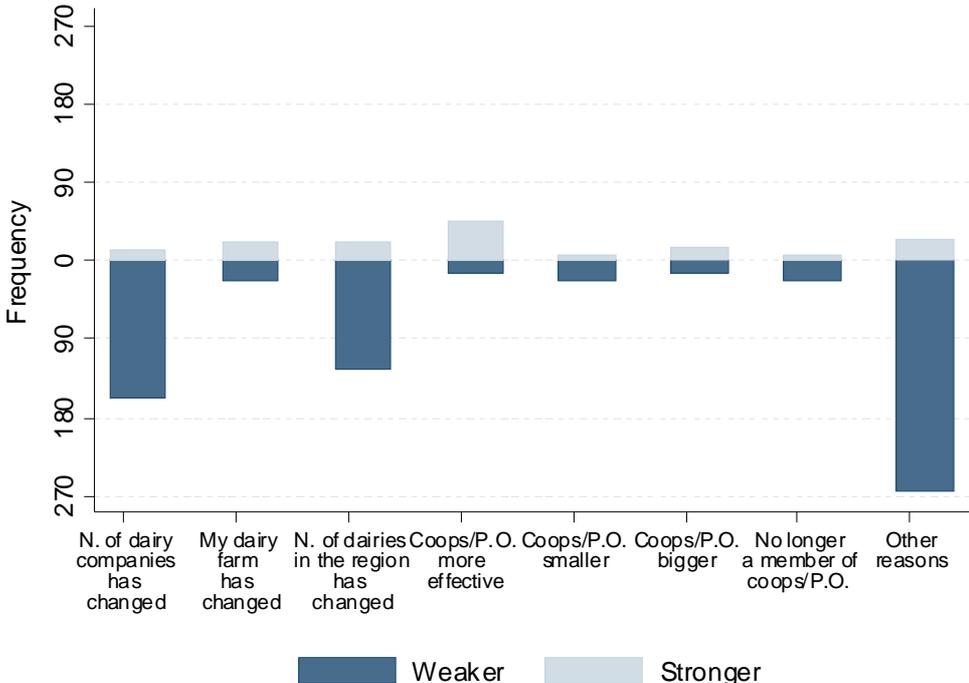
Source: Authors' calculations based on survey data.

The survey results indicate that the negotiation process can take a relatively long time. In the five study regions, we observed both geographical and temporal variation in the negotiation duration. As reported above, only a small share of surveyed farmers have the option to negotiate their contract, that is, 31% of the whole sample with a written contract. The average duration of contract negotiation among these farmers was 25 days. In Galicia and Podlaskie, contracts are negotiated in a relatively short time compared with other regions. On average in these two regions the negotiation is completed within 3–5 days, while in Asturias this takes a bit longer, around 10 days. In Normandie and Bayern, contract negotiation generally takes longer and can last up to 3 months. In general, the duration of contract negotiation is longer for large farmers (on average 45 days) than for medium and small farmers who, on average, conclude their negotiations in 17 and 20 days, respectively, although there are wide variations across regions.

Compared with 10 years ago, 40% of farmers perceived that they had weaker negotiating power vis-à-vis their main dairy buyer, whereas 41% of all surveyed farmers responded that they were more or less in the same position. The majority of those who reported having weaker negotiating power across all five study regions were from Galicia (56%). Only 9% of all surveyed farmers said that their negotiating power was stronger than it had been 10 years ago. The majority of these farmers were from Galicia (40%) and Bayern (35%).

The main reasons for changes in farmers’ negotiating power in relation to the main buyer in 2016 compared with 10 years ago include the smaller number of dairy buyers to whom farmers can deliver milk and the change in the number of dairy farms in the region (Figure 18). On the other hand, there is no clearly dominant reason for farmers reporting stronger negotiating power during the same period, although greater effectiveness of cooperatives or producer organizations was reported more frequently than other reasons (Figure 18).

**Figure 18. Reasons for changes in farmers’ negotiating power in relation to their main buyer in 2016 compared with 10 years ago (number of surveyed farmers)**



Source: Authors’ calculation based on survey data.

Although around 31% of all surveyed farmers negotiated their contract with the main buyer in 2016 (Table 17), farmers' responses suggest that not all elements included in the contract were negotiated. Table 19 summarises the contract terms that were included in the contract and negotiated with the main buyer in 2016. The most commonly negotiated contract terms are milk price, contract duration, premiums for higher milk quality and timing of payments. By contrast, some terms, such as safeguards if the buyer fails to fulfil the contract, the dispute resolution mechanism, the option for the buyer to refuse or adjust milk delivery conditions and the imposition of marketing or supply constraints on farmers, are not usually negotiated, although they are included in the contract. These results are largely similar to those reported for 10 years ago, although some inter-regional differences emerge during this period (not reported in Table 19).

**Table 19. Contract terms negotiated with the main buyer in 2016 (% of surveyed farmers with a given element included in the contract)**

	Galicia	Asturias	Normandie	Bayern	Podlaskie	Total
Duration	72.0	79.0	38.4	79.4	26.0	61.6
Automatic extension	12.2	34.9	17.1	26.0	28.7	20.0
Milk price	95.1	82.7	50.4	47.8	79.7	74.3
Premiums for higher milk quality	81.1	81.7	18.4	45.7	31.6	55.4
Timing of payments	56.2	40.9	3.1	52.9	24.4	42.6
Milk quantity is defined in the contract	53.4	62.8	59.1	5.7	15.3	35.4
Penalties if I fail to deliver under contract terms	27.5	32.9	16.3	14.1	4.9	18.8
Buyer can refuse or adjust milk delivery conditions	11.7	19.9	0.0	14.1	3.3	9.6
You (or farm organization/cooperative) can refuse or adjust milk delivery conditions	4.4	0.0	0.5	11.3	2.2	5.1
Dispute resolution mechanism	5.8	0.0	4.4	14.8	17.1	9.8
Obligation to invest in dairy production	4.3	0.0	0.9	3.3	3.3	3.3
Imposition of marketing/supply constraints	3.8	0.0	2.0	9.9	0.0	4.4
Milk quality testing	37.5	19.9	18.7	40.5	18.1	31.9
Safeguard if the buyer fails to fulfil the contract	8.4	0.0	0.5	9.9	1.1	6.2
Terms for contract cancellation	5.2	19.9	2.7	32.6	19.5	14.9
Consultancy	5.0	0.0	1.0	14.4	0.0	5.8
Direct or indirect funding	3.4	0.0	0.0	1.4	0.0	1.8
Sanitary and veterinary services	5.9	8.0	0.5	11.7	0.0	5.7

Source: Authors' calculations based on survey data.

Farmers unable to negotiate contractual arrangements (around 69% all surveyed farmers with a written contract) reported that the main reasons for this were (i) arrangements were determined by market standards (39% of surveyed farmers who did not negotiate the contract terms), (ii) arrangements were imposed by the buyer ("take it or leave it") (54%) and (iii) other (12%). In Galicia, Normandie and Podlaskie the option "take it or leave it" is quite a common reason for not negotiating contract terms. This practice affects 87%, 48% and 42% of farmers in these regions, respectively. Compared with 10 years ago, the option "take or leave it" is more common, particularly in Galicia and Normandie. In general, the imposition of contractual arrangements by the buyer is more often exercised towards small farmers than towards large ones in the study regions.

## 6. The incidence of unfair trading practices

This section presents the incidence of UTPs in the contract and at different stages of contract development (i.e. during contract execution and after contract finalization) among dairy farmers in the five studied regions. Note that the UTPs reported in this section are those perceived by dairy farmers with respect to their main milk buyer. The survey data show that dairy farmers might encounter as many as 17 different UTPs with their main milk buyer. The identified UTPs are described in Table 20.

The UTPs can be embodied in the contract content if it provides better business terms for the buyer than for the dairy farmer or if it imposes certain trading restrictions on dairy farms. For example, UTPs identified in contract content include one-sided clauses that specify more favourable conditions for the buyer than for the dairy farmer (e.g. the buyer can refuse or adjust milk delivery conditions, there is no safeguard defined if the buyer fails to fulfil the contract, the buyer has better contract cancellation terms), practices that impose supply constraints, requirements to undertake specific investments and prices set unilaterally by the buyer.

UTPs during contract execution include not respecting contract terms, delaying payments, unilaterally changing contract terms, refusing to accept milk deliveries and imposing additional fees/deductions. UTPs identified after contract finalization include cancelling the contract unilaterally before expiration and the "fear factor".

**Table 20. List of UTPs considered**

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### UTPs in the contract content

- Buyer can refuse or adjust milk delivery conditions
- Imposition of marketing/supply constraints
- No protection for farmer if the buyer fails to fulfil the contract
- Buyer has better contract cancellation terms than farmer
- Imposed dairy-specific investment in the past 10 years
- Price is set unilaterally by the buyer

### UTPs during contract execution

- Dairy paid lower price than contracted
- Dairy did not collect milk or refused to accept milk delivery
- Dairy paid only after a delay
- Dairy required milk quality or quantity different from that agreed
- Dairy imposed additional fees/deductions
- The price was changed unilaterally by the buyer
- The required quality was changed unilaterally by the buyer
- The required quantity was changed unilaterally by the buyer
- Buyer changed other terms of contract (e.g. credit, information provision, milk collection)

### UTPs after contract finalization

- Contract was ended by the buyer unilaterally before expiration
- Fear factor

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Source: Created by the authors based on survey data.

## 6.1 Unfair trading practices in the contract content

The survey data show that UTPs in the contract content are relatively common. Overall, 96% of surveyed farmers reported at least one UTP in their contract with the main buyer. Across the five studied regions, the share of farmers with at least one UTP varied between 91% in Bayern and 100% in Asturias (Table 21).

The most common UTP in the contract content is “no safeguard defined if the buyer fails to fulfil the contract”, followed by “price is set unilaterally by the buyer”, “dairy-specific investment required” and “buyer can refuse or adjust milk delivery conditions”, which were reported by 89%, 19%, 18% and 12%, respectively, of surveyed dairy farmers with a written contract across all five study regions. The prevalence of UTPs is largely similar across the five study regions. In Asturias, two out of the six UTPs seem not to affect farmers, while in Galicia the buyer’s ability to unilaterally change price is more common than in other regions. The imposition of dairy-specific investments affects mainly farmers in Normandie and Bayern. In Normandie, 22% of farmers with a written contract claim that the buyer has better contract cancellation terms, which is the highest figure among the five regions. The incidence of the remaining UTPs is less pronounced, with the exception of “imposition of marketing/supply constraints”, which 32% of surveyed farms in Normandie reported (Table 21).

**Table 21. UTPs in the contract content (% of respondents with a written contract)**

UTPs in the contract	Galicia (365)	Asturias (25)	Normandie (173)	Bayern (194)	Podlaskie (329)	Total
	%					
Buyer can refuse or adjust milk delivery conditions	17.8	15.8	10.0	12.1	5.9	11.9
Imposition of marketing/supply constraints	5.5	2.9	31.8	1.0	0.4	7.1
No protection for farmer if the buyer fails to fulfil the contract	85.7	100.0	88.4	85.1	94.6	89.1
Buyer has better contract cancellation terms than farmer	11.3	0.0	21.6	1.9	7.1	9.6
Imposed dairy-specific investment in the last 10 years	10.7	0.0	32.1	37.6	8.2	17.8
Price set unilaterally by the buyer	46.9	27.1	1.2	1.9	7.6	19.4
At least one UTP	96.3	100.0	99.6	90.7	97.1	96.1

Source: Authors’ calculations based on survey data.

## 6.2 Unfair trading practices during contract execution and after contract finalization

According to the survey results, around 60% of surveyed farmers reported having a rather good relationship with their main buyer, while 15% reported having a very good one. This is reflected in the relatively low incidence of UTPs during contract execution and after contract finalization. However, the UTPs reported by farmers are those experienced in one year (in 2016), indicating that their incidence may be greater if accumulated across several years.

Overall, across all five regions, only around 9% of surveyed farmers with a written contract reported at least one UTP during contract execution and after contract finalization. Galicia had the largest share of farmers reporting at least one UTP during contract execution and after contract finalization (18% of surveyed farms with a written contract), followed by Asturias (9%), Bayern (7%) and Normandie (6%). Podlaskie had the smallest share (1%) (Table 22).

The fear factor represents the most common UTP, with around 4% of farmers with a written contract reporting this across all five regions. Its incidence varies substantially among regions: Galicia has the highest figure, at 8%, followed by Asturias (4%), Normandie (2%) and Bayern (2%). This UTP seems not to be a problem in Podlaskie. The low incidence of UTPs after contract expiration is likely to be because the majority of surveyed farmers (77%) had an active contract during the period covered (2016) (Table 22).

Unilateral change of price by the buyer appears to be the second most important UTP among farmers as shown in Table 22. Around 3% of farmers with a written contract reported this UTP across all five study regions. In Galicia and Asturias, the share of farmers affected is the highest among the five study regions, albeit relatively low, at 6% and 4% of farmers with a written contract, respectively. In Bayern, unilateral change in the required quality of milk deliveries seems to be the most common UTP (around 3% of surveyed farmers) (Table 22).

The incidence of the other UTPs listed in Table 22 is around 2% or less of surveyed farmers across all five regions. For example, only around 1% of farmers with a written contract have experienced buyers unilaterally changing the required quality or quantity of delivered milk. The same is true for the buyer ending the contract unilaterally before expiration. For the rest of the UTPs in Table 22 the incidence is less than 0.5%.

It is interesting to note that 20% of surveyed farmers with a written contract had the contract terminated after its expiration in 2016. Independently of the form of contract termination, 83% of farmers who had the contract terminated signed a new one with the same buyer, 13% signed a contract with a new buyer and 4% were not able to sign a new contract. For the majority of farmers who signed a new contract, this led to changes in contract terms. Only 13% of farmers who signed a new contract with the same buyer maintained the same terms as in the previous contract, while only 8% of farmers who signed a new contract with a different buyer maintained the same conditions. The contract terms that were most commonly changed were price (75%) and the required quality and quantity of milk (35%). Less frequently changed contract terms were the requirement to invest in dairy activities and others (i.e. credit, milk collection, etc.) (1%).

**Table 22. UTPs during contract execution and after contract finalization in 2016 (% of respondents with a written contract)**

UTPs	Galicia	Asturias	Normandie	Bayern	Podlaskie	Total
	%					
<i>UTPs during contract execution</i>						
Dairy paid lower price than contracted	1.3					0.4
Dairy did not collect milk or refused to accept milk delivery	0.3		0.1			0.1
Dairy paid only after a delay	0.2		0.5			0.1
Dairy required milk quality or quantity different than that agreed	0.5					0.2
Dairy imposed additional fees/deductions	0.9					0.3
The price was changed unilaterally by the buyer	6.4	4.4		1.7	0.4	2.7
The required quality was changed unilaterally by the buyer	1.9			3.4		1.2
The required quantity was changed unilaterally by the buyer	3.0		3.4			1.5
Buyer changed other terms of contract (e.g. credit, information provision, milk collection)				1.7		0.3
<i>UTPs after contract finalization</i>						
Contract was ended by buyer unilaterally before expiration	2.2			1.6	0.7	1.2
Fear factor	8.2	4.4	2.2	1.6		3.5
At least one UTP	17.6	8.7	5.7	7.1	1.1	8.6

Source: Authors' calculations based on survey data.

### 6.3 Overall incidence of unfair trading practices

Table 23 summarises the incidence of UTPs across the regions by presenting the share of dairy farmers reporting a certain number of UTPs at any stage of the contractual relationship (i.e. in the contract content, during contract execution or after contract finalization). Overall, 98% of surveyed farmers with a written contract reported at least one UTP out of 17, whereas 54% of surveyed farmers with a written contract reported at least two UTPs, 30% at least three UTPs and 19% at least four UTPs. Few dairy farmers reported more than four UTPs.

The comparison across the five study regions shows that the share of farmers with at least one UTP varies between 95% in Bayern and 100% in Asturias (Table 23). Asturias, Galicia, Normandie and Bayern have greater shares of farmers reporting two or more UTPs than Podlaskie or Asturias.

**Table 23. Occurrence of UTPs in 2016 (% of respondents with a written contract)**

	Galicia	Asturias	Normandie	Bayern	Podlaskie	Total
At least 1 UTP	98.5	100.0	99.6	94.6	97.7	97.7
At least 2 UTPs	69.1	54.0	63.9	59.5	29.6	54.2
At least 3 UTPs	40.6	28.0	35.2	31.0	15.7	30.2
At least 4 UTPs	24.4	12.2	25.2	21.9	7.2	18.5
At least 5 UTPs	13.5	6.3	19.8	16.9	4.0	12.0
At least 6 UTPs	9.3	6.3	16.0	14.4	1.9	8.9
At least 7 or more UTPs	6.9	2.9	12.0	10.2	1.2	6.4

Source: Authors' calculations based on survey data.

Table 24 compares the incidence of UTPs among members and non-members of cooperative or producer organizations. The results show no statistically significant difference in the occurrence of UTPs between members and non-members.

**Table 24. Occurrence of UTPs and farmers' membership of cooperative/producer organizations in 2016 (% of respondents with a written contract)**

	Members	Non-members
At least 1 UTP	97.5	98.3
At least 2 UTPs	53.7	55.1
At least 3 UTPs	30.6	29.2
At least 4 UTPs	19.0	17.6
At least 5 UTPs	11.9	12.2
At least 6 UTPs	8.9	8.8
At least 7 or more UTPs	6.3	6.7

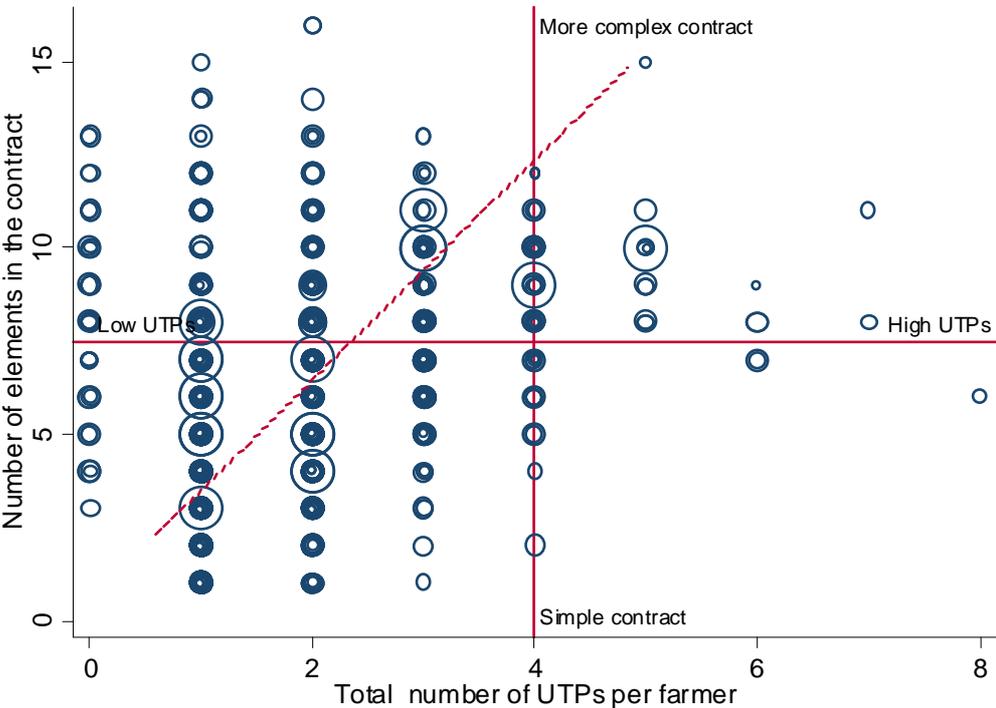
Source: Authors' calculations based on survey data

## **6.4 Relationship between unfair trading practices and contract completeness**

In this section, we correlate the (maximum) number of UTPs per farm (from a total of 17) and contract completeness. The number of UTPs per farm is a simple count of the different UTPs reported by farmers at all stages of contract development. The contract completeness measure is the number of elements defined in the contract from the list shown in Table 19. The relationship between the number of UTPs per farm and contract completeness is plotted in Figure 19. As the figure shows (x-axis), the maximum number of UTPs per farm does not exceed eight. The sizes of the circles in the figure indicate the frequency of the occurrence of a particular combination of number of UTPs per farm and degree of contract completeness. For example, the frequency of farms facing two UTPs and having five elements defined in the contract is greater than the frequency of farms facing four UTPs and having five elements set in the contract.

Although there appears to be no strong relationship between the occurrence of UTPs and contract completeness, in general, simple contracts tend to be associated with a lower frequency of UTPs, whereas a higher frequency of UTPs tends to be linked with more complex contracts. This positive correlation between the occurrence of UTPs and contract completeness is indicated by the red dotted line in Figure 19.

**Figure 19. The relationship between the incidence of UTPs and contract completeness**



Source: Authors' calculation based on survey data.

## 7. Conclusions and limitations

The organization and structure of food supply chains are characterized by complex interactions, with increased vertical coordination among actors operating in the chain. At the same time, food supply chains have witnessed increased moves towards concentration in input supply, processing and retail sectors. The growth of vertically integrated markets in food supply chains provides an opportunity for firms with bargaining power to impose their influence on weaker players, such as farmers, by adopting UTPs. There are also other factors that may lead to the occurrence of UTPs, such as the switching costs of changing trading party, asymmetric information, incompleteness of contracts and asymmetric costs of contract enforcement. UTPs may have various adverse impacts on the functioning of the EU food supply chain in general and may negatively affect the farming sector in particular (e.g. in terms of investments, farm entry and exit, market uncertainty, income distribution along the food supply chain, lower quality of food products on the market). Despite this, the actual impact of UTPs on the farming sector is still not fully understood; there are few empirical studies available in the literature investigating the incidence of UTPs in the farming sector.

This report attempts to shed some light on this issue by analysing the incidence of UTPs in the dairy sector in selected EU regions. The analyses in this report are based on a survey conducted in five EU regions in 2017: Bayern (Germany), Normandie (France), Podlaskie (Poland), and Galicia and Asturias (Spain). The survey allows us to examine the incidence of UTPs, as reported by dairy farmers, in the contract content and across the various phases of contract development.

The key characteristics of the surveyed farms indicate that most farms are managed by men (76% of all surveyed farms) and the average age of the head of the farm is 47 years. Most heads of farms have at least secondary education in Bayern, Normandie and Podlaskie, whereas in the two Spanish regions the majority have only primary education. The surveyed dairy farms predominantly rely on unpaid family labour (83% of surveyed farmers). The surveyed farms usually rent the land they use, except in Podlaskie, where more than 70% of the sampled farmers own the land they use. In all of the other regions, more than 80% of land is rented.

In the five studied regions, the production of cow's milk follows the same general upward trend experienced at MS level. On average, the average milk price received by surveyed farmers had decreased in all regions in 2016 compared with 10 years ago, with the exception of Podlaskie, where the milk price received by the surveyed farmers had increased during this period.

The type of buyer to which the surveyed farmers deliver their milk is heterogeneous across the five regions. In Galicia, Normandie, Bayern and Asturias, most surveyed farmers (more than 50%) deliver the milk to processing companies. In Podlaskie, the majority of farmers (62%) deliver to collecting or processing cooperatives. Collecting or processing cooperatives are also important buyers in Bayern and Normandie (for around 25% of surveyed farmers), while collective cooperative are the second most important buyers in Asturias (33%). The concentration of buyers is relatively high in Podlaskie, Normandie and especially Asturias, where the majority of surveyed farmers (50% or more) deliver their milk to two buyers. Bayern and Galicia have a less concentrated market structure (60 different buyers or more), with two main buyers purchasing milk from 15% and 26% of the surveyed farmers, respectively.

The majority of farmers tend to be located relatively far (more than 50 km distance) from their main buyer in Galicia and Normandie compared with farmers in the other three studied regions, who are usually located between 10 and 50 km away. With the exception of farmers in Galicia, more than half of the surveyed farmers declared having a business relationship with their main milk buyer that had lasted more than 20 years. In general, the surveyed farmers had no intention of changing their main buyer; only around 24% had considered it. The main reasons for maintaining the relationship with

their main buyer were price level, price stability, constancy of milk collection and an assurance that all the milk would be collected.

Altogether, the majority of surveyed farms have a written contract with the main buyer, either as an individual contract (55%) or through a cooperative or producer organization (26%), except in Asturias, where many farmers have informal contractual arrangements. The average duration of a contract varies from 9 months in Asturias and Galicia to 58 months in Normandie. In all five regions, we observed that, on average, contracts explicitly specify around five different milk delivery terms. The most common terms are milk quality testing, duration of contract, milk price, timing of payments and premiums for higher milk quality. Milk prices are usually set in the contract based on a predefined formula. The most common parameter for price setting in the contract among surveyed farmers is protein content, followed by fat content, somatic cells and bacteria. The quality testing of milk deliveries as specified in the contract is done mainly by buyers in Podlaskie and in the two Spanish regions, whereas in Normandie and Bayern this testing is usually carried out by a third party.

The results show that the surveyed farmers usually do not negotiate their contract with the main buyer. The most common reasons for not negotiating on contractual arrangements, as reported by farmers, are because they were determined by market standards or because they were imposed by the buyer. The share of farmers with a written contract who negotiated the contract with the main buyer is 31% of all surveyed farmers; the figure varies between around 15% in Podlaskie and 43% in Bayern and Galicia. In Asturias, Galicia, Normandie and Podlaskie, the majority of surveyed farmers who negotiate their contracts usually do it by themselves, whereas in Bayern they do this through a cooperative or producer organization. Furthermore, not all terms in the contract are negotiated. The most commonly negotiated terms are milk price, contract duration, premiums for higher milk quality and timing of payments. Other contract terms are not usually negotiated, although they are included in the contract.

The results show that the incidence of UTPs is quite significant. In total, the surveyed dairy farmers reported 17 different UTPs. Overall, 98% of surveyed farmers reported at least one UTP and 54% reported at least two UTPs. The comparison across the five study regions shows that the share of farmers with at least one UTP varies between 95% in Bayern and 100% in Asturias. These results are largely in line with the literature findings. Although there is limited literature in the field, the available studies also find a high incidence of UTPs. For example, Copa-Cogeca (2013a, 2013b) found that around 94% of surveyed farms were affected by at least one UTP. Similarly, the CIAA-AIM (2011) study of the processing and retail sectors found that 96% of surveyed companies were exposed to UTPs.

The largest share of UTPs was found in the contract content, with 96% of surveyed farmers with a written contract reporting at least one UTP. The incidence of UTPs during contract execution and after contract finalization was relatively low. Only around 9% of surveyed farmers with a written contract reported at least one UTP during these phases. The most common UTPs in the contract content are "no safeguard defined if the buyer fails to fulfil the contract" followed by "price is set unilaterally by the buyer", "dairy-specific investment required" and "buyer can refuse or adjust milk delivery conditions". The "fear factor" represents the most common UTP during contract execution and after contract finalization, followed by buyers unilaterally changing prices and the required quality of milk deliveries.

Our results suggest that there is some evidence of a positive correlation between the incidence of UTPs and contract completeness. That is, simple contracts tend to be associated with a lower frequency of UTPs, whereas a higher frequency of UTPs tends to be linked with more complex contracts.

When drawing conclusions, one needs to be aware that our findings obviously reflect the limitations of the approach taken in the report. First, the report covers UTPs reported by dairy farmers and it does not cover other segments of the dairy supply chain. A second

potential caveat to our analysis is that the results cannot be extrapolated to all sectors or to the whole EU; they are valid only for the dairy sector and for the five regions covered in the report. Third, because of the complex nature of measuring the actual presence of UTPs, other indirect indicators may suggest the presence of UTPs that were not classified as UTPs but are described in the report. For example, this might include the non-negotiation of contract terms. Although the non-negotiation of contract terms does not directly imply UTPs, it might suggest their occurrence. Given that negotiation is a common way for farms to receive better contract terms, non-engagement in negotiations implies that farmers are not able to alter the conditions obtained because the contract terms offered by the buyer are fixed ("take it or leave it") or because farmers perceive the net gains that can be achieved by negotiation as small (e.g. because they have inferior bargaining power), thus potentially resulting in unfair contract terms for farmers. This consideration may mean that UTPs are underestimated. Finally, the report analyses UTPs only in formalized contractual business relationships (written contracts) between dairy farmers and buyers, and does not cover UTPs in informal business relationships. Future research should analyse each of these limitations of the approach to test the robustness of the results and to provide a complete picture of the incidence of UTPs along the EU food supply chain.

## 8. References

- Assefa, T.T., Kuiper, W.E. and Meuwissen, M.P.M. (2014). The effect of farmer market power on the degree of farm retail price transmission: A simulation model with an application to the Dutch ware potato supply chain. *Agribusiness* 30(4): 424–437.
- Basic (2015). "Banana value chains in Europe and the consequences of unfair trading practices." Bureau for the Appraisal of Social Impacts for Citizen information and Fair Trade Advocacy Office <<http://www.bananalink.org.uk/banana-value-chains-europe-and-consequences-unfair-trading-practices>>.
- Berdegú, J. A. (2001) "Cooperating to compete: Associative peasant business firms in Chile." Ph.D. Thesis, Department of Social Sciences, Communication and Innovation Studies Group, Wageningen University and Research Centre. Wageningen, The Netherlands.
- Beyer, J. (2008). "The impacts of fair-trade coffee in producer countries." An Honours essay submitted to Carleton University, Department of Economics, Carleton University.
- Bonanno, A, Russo, C. and Menapace, L. (2018). Market power and bargaining in agrifood markets: A review of emerging topics and tools. *Agribusiness* 34: 6–23.
- Butler, P. and Herbert, C. (2014). Access to justice for small and medium sized enterprises: The case for a bilateral arbitration treaty. *New Zealand Universities Law Review* 26: 186-221.
- CIAA-AIM (2011). "Unfair commercial practices in Europe." Dedicated study commissioned by CIAA and AIM <[http://ec.europa.eu/internal\\_market/consultations/2013/unfair-trading-practices/docs/contributions/registered-org/federacion-espanola-de-industrias-de-alimentacion-y-bebidas-fiab-2-annex\\_es.pdf](http://ec.europa.eu/internal_market/consultations/2013/unfair-trading-practices/docs/contributions/registered-org/federacion-espanola-de-industrias-de-alimentacion-y-bebidas-fiab-2-annex_es.pdf)>.
- CNC (2011). "Report on the relations between manufacturers and retailers in the food sector." Comisión Nacional de la Competencia, October 2011. <<https://www.cnmc.es/sites/default/files/1186012.pdf>>.
- Copa-Cogeca (2013a). "Impact of unfair trading practices in the European agri-food sector." Dedicated study commissioned by Copa-Cogeca.
- Copa-Cogeca (2013b). "Copa-Cogeca contribution to the public consultation on the Green Paper on unfair trading practices (utps) in business to business (B2B) relations in the food and non-food supply chain." FC(13)2538:4-PG/sd, Copa-Cogeca <[http://ec.europa.eu/internal\\_market/consultations/2013/unfair-trading-practices/docs/contributions/registered-org/copa-cogeca\\_en.pdf](http://ec.europa.eu/internal_market/consultations/2013/unfair-trading-practices/docs/contributions/registered-org/copa-cogeca_en.pdf)>.
- Davis, P. and Reilly, A. (2010). Market power, market outcomes, and remedies in the UK groceries market. *Agricultural Economics* 41(1): 93–108.
- DeFries, R.S., Fanzo, J., Mondal, P., Remans, R. and Wood, S. A. (2017). Is voluntary certification of tropical agricultural commodities achieving sustainability goals for small-scale producers? A review of the evidence. *Environmental Research Letters* 12: 1–11.
- Delgado, C. (1999). Sources of growth in smallholder agriculture in sub-Saharan Africa: the role of vertical integration of smallholders with processors and marketers of high value-added items. *Agrekon* 38: 165-189.
- Digal, L. N. and Ahmadi-Esfahani, F. Z. (2002). Market power analysis in the retail food industry: A survey of methods. *Australian Journal of Agricultural and Resource Economics* 46: 559–584. doi:10.1111/1467-8489.00193
- Dries, L. (2017). "The economic impact of unfair trading practices on upstream suppliers (farmers)." Paper presented at the workshop Unfair Trading Practices in the Food Supply Chain, European Commission, Brussels, 17–18 July 2017.

- Dries, L. and Swinnen, J.F.M. (2004). Foreign direct investment, vertical integration, and local suppliers: Evidence from the Polish dairy sector. *World Development* 32(9): 1525–1544.
- ESS (2014). "Documentation of ESS post-stratification weights." European Social Survey <[https://www.europeansocialsurvey.org/docs/methodology/ESS\\_post\\_stratification\\_weights\\_documentation.pdf](https://www.europeansocialsurvey.org/docs/methodology/ESS_post_stratification_weights_documentation.pdf)>.
- EU (2012a). Regulation (EU) No 261/2012 of the European Parliament and of the Council of 14 March 2012 amending Council Regulation (EC) No 1234/2007 as regards contractual relations in the milk and milk products sector. *Official Journal of the European Union* L 94: 38–48.
- EU (2012b). Commission Implementing Regulation (EU) No 511/2012 of 15 June 2012 on notifications concerning producer and interbranch organisations and contractual negotiations and relations provided for in Council Regulation (EC) No 1234/2007 in the milk and milk products sector. *Official Journal of the European Union* L 156: 39–40.
- EU (2013). Regulation (EU) No 1308/2013 of the European Parliament and of the Council of 17 December 2013 establishing a common organisation of the markets in agricultural products and repealing Council Regulations (EEC) No 922/72, (EEC) No 234/79, (EC) No 1037/2001 and (EC) No 1234/2007. *Official Journal of the European Union* L 347: 671–854.
- European Commission (2013a). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Setting up a European Retail Action Plan. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0036&from=EN>
- European Commission (2013b). Green Paper on unfair trading practices in the business-to-business food and non-food supply chain in Europe. <<http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0037&from=EN>>
- European Commission (2014a). "Communication on unfair trading practices: frequently asked questions." European Commission <[http://europa.eu/rapid/press-release\\_IP-14-831\\_en.htm](http://europa.eu/rapid/press-release_IP-14-831_en.htm)>.
- European Commission (2014b). "Tackling unfair trading practices in the business-to-business food supply chain." Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, European Commission, Strasbourg <[http://ec.europa.eu/internal\\_market/retail/docs/140715-communication\\_en.pdf](http://ec.europa.eu/internal_market/retail/docs/140715-communication_en.pdf)>.
- European Commission (2015). "State of the Union 2015: Time for honesty, unity and solidarity." European Commission, Brussels <[http://europa.eu/rapid/press-release\\_SPEECH-15-5614\\_en.htm](http://europa.eu/rapid/press-release_SPEECH-15-5614_en.htm)>
- European Commission (2016a). "State of the Union Address 2016: Towards a better Europe – a Europe that protects, empowers and defends." European Commission, Brussels <[http://europa.eu/rapid/press-release\\_SPEECH-16-3043\\_en.htm](http://europa.eu/rapid/press-release_SPEECH-16-3043_en.htm)>
- European Commission (2016b). "Development of the dairy market situation and the operation of the 'Milk Package' provisions." Report from the Commission to the European Parliament and the Council, European Commission, Brussels.
- European Commission (2017). "Inception impact assessment: Initiative to improve the food supply chain." European Commission, Brussels, [https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-3735471\\_en](https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2017-3735471_en)
- European Commission (2018). "Proposal for a Directive of the European Parliament and of the Council on unfair trading practices in business-to-business relationships in the food supply chain." European Commission, Brussels <[https://ec.europa.eu/info/law/better-regulation/initiative/223383/attachment/090166e5b9e75a66\\_en](https://ec.europa.eu/info/law/better-regulation/initiative/223383/attachment/090166e5b9e75a66_en)>

- European Council (2016a). "Strengthening farmers' position in the food supply chain: Council conclusions." <http://www.consilium.europa.eu/en/press/press-releases/2016/12/12-conclusions-food-supply-chain>.
- European Council (2016b). "Strengthening farmers' position in the food supply chain and tackling unfair trading practices: Council conclusions." Council of the European Union, Brussels <http://www.consilium.europa.eu/en/press/press-releases/2016/12/12-conclusions-food-supply-chain/>
- European Parliament (2016). "European Parliament resolution of 7 June 2016 on unfair trading practices in the food supply chain (2015/2065(INI))." European Parliament, <http://www.europarl.europa.eu/sides/getDoc.do?type=TA&language=EN&reference=P8-TA-2016-0250>
- Fałkowski, J. and Ciaian, P. (2016). "Factors supporting the development of producer organizations and their impacts in the light of ongoing changes in food supply chains: A literature review." JRC Technical Report No EUR 27929 EN, Joint Research Centre, European Commission.
- Fałkowski, J., Ménard, C., Sexton, R.J., Swinnen, J. and Vandeveld, S. (Authors), Di Marcantonio, F., and Ciaian, P. (eds) (2017). "Unfair trading practices in the food supply chain: A literature review on methodologies, impacts and regulatory aspects." European Commission, Joint Research Centre.
- Fotini, F., Evangelia, V. and Michai, V. (2013). "Weighting of responses in the Consumer Survey: Alternative approaches – Effects on variance and tracking performance of the Consumer Confidence Indicator." Foundation for Economic and Industrial Research.
- Key, N. and Runsten, D. (1999). Contract farming, smallholders, and rural development in Latin America: the organization of agro processing firms and the scale of out grower production. *World Development* 27(2): 381-401.
- Kirsten, J. and Sartorius, K. (2002). Linking agribusiness and small-scale farmers in developing countries: is there a new role for contract farming? *Development Southern Africa* 19(4): 503-529.
- Goetz, L., Taubadel, S.V.C. and Kachel, Y. (2008). "Measuring price transmission in the international fresh fruit and vegetable supply chain: The case of Israeli grapefruit karachis to the EU." Discussion Paper No 10-08.
- Gow, H., Streeter, D. and Swinnen, J. (2000). How private enforcement mechanisms can succeed where public institutions fail: The case of Juhocukor a.s. *Agricultural Economics* 23: 253-265.
- Gow, H. and Swinnen, J. (2000). "Impact of foreign direct investment on agriculture and agro-industry in transition economies". In: Csaki, C. and Lerman, Z. (eds), *Structural Change in the Farming Sectors in Central and Eastern Europe*. World Bank Technical Paper No 465. Washington, DC: World Bank Publications.
- Gorton, M., Lemke, F. and Alfarsi, F. (2017). "Methodological framework: Review of approaches applied in the literature to analyse the occurrence and impact of UTPs." Paper presented at the workshop Unfair Trading Practices in the Food Supply Chain, European Commission, Brussels, 17-18 July 2017.
- Iamicelli, P. and Cafaggi, F. (2017). "Monitoring UTPs for supporting better regulations: What is the information we need? What information do we miss?" Paper presented at the workshop Unfair Trading Practices in the Food Supply Chain, European Commission, Brussels, 17-18 July 2017.
- Italian Competition Authority (2013). "IC43 – Agroalimentare: Antitrust, più forte il potere di mercato della GDO, rapporti conflittuali con i fornitori e effetti incerti sui consumatori." Italian Competition Authority <<http://www.agcm.it/stampa/comunicati/6548-ic43-agroalimentare-antitrust-piu->

forte-il-potere-di-mercato-della-gdo-rapporti-conflittuali-con-i-fornitori-e-effetti-incerti-sui-consumatori.html>.

- Johnson, D.R. (2008). "Using weights in the analysis of survey data." Population Research Institute.
- Katchova, A.L. (2013). "Agricultural Contracting and Agrifood Competition." In: James, Jr. H. (eds) *The Ethics and Economics of Agrifood Competition. The International Library of Environmental, Agricultural and Food Ethics*, Vol. 20, pp 177-191, Springer, Dordrecht.
- MacDonald, J.M. and Key, N. (2012). Market power in poultry production contracting? Evidence from a farm survey. *Journal of Agricultural and Applied Economics* 44(4):477-490.
- MacDonald, J. M., and Korp, P. (2011). "Agricultural contracting update: Contracts in 2008." Economic Information Bulletin No (EIB-72).
- Maertens, M., Colen, L. and Swinnen, J.F.M. (2011). Globalisation and poverty in Senegal: a worst case scenario? *European Review of Agricultural Economics* 38(1): 31-54.
- Maertens, M. and Swinnen, J.F.M. (2012). Gender and Modern Supply Chains in Developing Countries. *Journal of Development Studies* 48(10): 1412-1430.
- McCorrison, S. (2002). Why should imperfect competition matter to agricultural economists? *European Review of Agricultural Economics* 29: 349-372.
- Ménard, C. (1996), On clusters, hybrids and other strange forms: The case of the French poultry industry. *Journal of Institutional and Theoretical Economics* 152: 154-183.
- Ménard, C. and Valceschini, E. (2005), New institutions for governing the agri-food industry. *European Review of Agricultural Economics* 32(3): 421-440.
- Mérel, P. R., and Sexton, R. J. (2017). Buyer power with atomistic upstream entry: Can downstream consolidation increase production and welfare? *International Journal of Industrial Organization* 50: 259-293.
- Milgrom, P. and Roberts J.D. (1992). *Economics, Organization, and Management*. New York: Prentice Hall.
- Muthoo, A. (1999). *Bargaining Theory with Applications*. Cambridge, United Kingdom: Cambridge University Press.
- Nunnenkamp P. (2004). To what extent can foreign direct investment help achieve international development goals? *World Economy* 27: 657-677.
- Otsuka, K., Nakano, Y. and Takahashi, K. (2016). Contract farming in developed and developing countries. *Annual Review of Resource Economics* 8: 353-376.
- PEAS (2009). "Adjusting for non-response by weighting." PEAS <<http://www.restore.ac.uk/PEAS/nonresponse.php>>.
- Perekhozhuk, O., Glauben, T., Grings, M. and Teuber, R. (2016). Approaches and methods for the econometric analysis of market power: A survey and empirical comparison. *Journal of Economic Surveys* 00(0): 1-23.
- Potts, J., Fernandez, G. and Wunderlich, C. (2007). "Trading practices for a sustainable coffee sector. Context, strategies and recommendations for action." Prepared as a background document for the Sustainable Coffee Partnership, November 2007 <[https://www.iisd.org/sites/default/files/publications/trade\\_sustain\\_coffee\\_sector.pdf](https://www.iisd.org/sites/default/files/publications/trade_sustain_coffee_sector.pdf)>.
- Pultrone, C. (2012). An overview of contract farming: Legal issues and challenges. *Uniform Law Review* 17: 263-289.

- Renda, A., Cafaggi, F., Pelkmans, J., Iamiceli, P., de Brito, A.C., Mustilli, F. and Bebbler, L. (2014). "Study on the legal framework covering business-to-business unfair trading practices in the retail supply chain." DG Internal Market, European Commission.
- Razafindrakoto, R. and Roubaud, F. (2002). "Les entreprises franchises à Madagascar: Atouts et contraintes d'une insertion mondiale réussie" *Afrique contemporaine* N°202-203, pp. 147-163.
- Reardon, T. and Barrett, C.B. (2000). Agroindustrialization, Globalization, and International Development: an overview of issues, patterns, and determinants. *Agricultural Economics* 23(3): 195-205.
- Reardon, T., Berdegue, J.A. and Farrington, J. (2002). "Supermarkets and Farming in Latin America: Pointing Directions for Elsewhere?" *Natural Resource Perspectives* No. 81, Overseas Development Institute, London.
- Reardon, T., Timmer, C.P. and Berdegue, J. A. (2003) "The Rapid Rise of Supermarkets in Latin America and East/South-East Asia: Implications for Domestic and International Markets for Fruits and Vegetables." in AnitaRegmi and MarkGehlhar (eds), *Global Markets for High Value Food Products*, Agriculture Information Bulletin. Washington , DC : USDA-ERS.
- Reardon, T., and Swinnen, J. F. M. (2004). Agrifood sector liberalisation and the rise of supermarkets in former state-controlled economies: A comparative overview. *Development Policy Review*, 22(5), 515-523.
- Russo, C., Sorrentino, A. and Menapace, L. (2017). "The impact of UTPs on consumers: Review of empirical studies." Paper presented at the workshop Unfair Trading Practices in the Food Supply Chain, European Commission, Brussels, 17–18 July 2017.
- Saenger, C., Torero, M. and Qaim, M. (2014). Impact of third-party contract enforcement in agricultural markets – A field experiment in Vietnam. *American Journal of Agricultural Economics* 96(4): 1220–1238.
- Sexton, R.J. (2000). Industrialization and consolidation in the U.S. food sector: Implications for competition and welfare. *American Journal of Agricultural Economics* 82: 1087–1104.
- Sexton, R.J. (2013). Market power, misconceptions, and modern agricultural markets. *American Journal of Agricultural Economics* 95(2): 209–219.
- Sexton, R. (2017a). "Business-to-business unfair trading practices in the food supply chain: What are they? How common are they? And what should we do about them?" Paper presented at the workshop on "Unfair Trading Practices in the Food Supply Chain", European Commission, Brussels, 17–18 July 2017.
- Sexton, R. (2017b). "Unfair trade practices in the food supply chain: Defining the problem and the policy issues." In: Fałkowski, J., Ménard, C., Sexton, R.J., Swinnen, J. and Vandeveld S. (Authors), Di Marcantonio, F. and Ciaian P. (eds), *Unfair trading practices in the food supply chain: A literature review on methodologies, impacts and regulatory aspects*, JRC Technical Report No EUR 28791. European Commission, Joint Research Centre.
- Swinnen, J.F.M., Beerlandt, H. and Dries, L. (2003). Globalisation, Agricultural Development and Rural Welfare in Transition. *Tijdschrift voor Economie en Management* 48(4): 619-640.
- Swinnen, J. and Vandevelde, S. (2017). "Unfair trading practices – The way forward." In: Fałkowski, J., Ménard, C., Sexton, R.J., Swinnen J., and Vandevelde S. (Authors), Di Marcantonio, F. and Ciaian, P. (eds), *Unfair trading practices in the food supply chain: A literature review on methodologies, impacts and regulatory aspects*, JRC Technical Report No EUR 28791. European Commission, Joint Research Centre.

- Vandeplass, A., Minten, B. and Swinnen, J.F.M. (2012). Multinationals vs. Cooperatives: The Income and Efficiency Effects of Supply Chain Governance in India. *Journal of Agricultural Economics* 64(1): 217-244.
- Vavra, P. (2009). "Role, usage and motivation for contracting in agriculture." OECD Food, Agriculture and Fisheries Papers No 16. Paris: OECD Publishing.
- Vavra, P. and Goodwin, B.K. (2005). "Analysis of Price Transmission Along the Food Chain. OECD Food," Agriculture and Fisheries Working Papers, No. 3, OECD Publishing.
- Weatherspoon, D., Cacho, J. and Christy, R. (2001). Linking globalization, economic growth and poverty: impacts of agribusiness strategies on sub-Saharan Africa. *American Journal of Agricultural Economics* 83(3): 722-729.
- Weatherspoon, D.D. and Reardon, T. (2003). The rise of supermarkets in Africa: Implications for agrifood systems and the rural poor. *Development Policy Review* 21 (3), 333-356.
- Wijnands, J.H.M., Bijman, J. and Tramnitzke, T. (2017). "Analyses of the functioning of Milk Package provisions as regards producer organisations and collective negotiations." JRC Technical Report No EUR 28762, Joint Research Centre, European Commission.

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