Unfair Trading Practices in the Dutch dairy sector

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Preface

In my studies, both in my Master in Agricultural Economics and Bachelor Spatial Planning, I always searched for the relation between the economics driving the agricultural market and the spatial outcome it has on landscape. Growing up in a rural part of the Netherlands known for its bocage landscapes and many (dairy) farms, the competitiveness of the agricultural sector compared to other parts in the Netherlands and Europe decreased significantly resulting in fewer farmers in the region. This changed the dynamics of the town and surrounding towns which encountered the same change. This intrigued me to study the relation between the economics driving the agricultural market and the spatial outcome and impacts it has on landscapes. During my study I broadened my scope on several topics ranging from design to impact analyses, but always with a focus on the rural areas in which agriculture and nature are combined. I noticed that an interest of me was the policy and frameworks behind landscape changes driven by economics. Especially the course thought by dr. Jongeneel and dr. Ihle in the course Agriculture, Food & Policy thought and showed me a complete picture on the relation between the economics and spatial outcome of agricultural competitiveness. This intrigued me to further pursue my study in this area of policy research, but came to the conclusion that, despite my interest in the topic, the view on the sideline was more interesting than the work in this particular area. I therefore changed paths to become a Geography teacher to fascinate the young people around me with the relation between Geography and Economics that still fascinates me today.

The subject on Unfair Trading Practices was new for me, because I hardly came across them from my research and study perspective. Therefore I quite struggled throughout this thesis to fully grasp the essentials of the subject. Therefore, I want to thank my supervisors dr. Liesbeth Dries and dr. Rico Ihle gratefully as they have guided me through this thesis with much dedication and feedback to get me back on track, as I most often dwell from it. I want to thank dr. Federica di Marcantonio and dr. Pavel Ciaian from the Joint Research Centre, a Research institute from the European Commission, for their help with good critique at the start of this thesis and during the questionnaire development. I want to thank dr. ir Jack Peerlings as the second reader of this thesis and the time he invested in me during my internship. I also want to thank dr. ir. Jongeneel on showing and guiding me in the world of agricultural policy and research and the role of researchers in this process during my internship at WEcR. I also want to thank the Dutch Dairymen Board, and specially Tjitske de Groot, for the support and interest for this research and special thanks for their willingness to finance the data gathering. Thanks to Agrio for executing the questionnaire in such short notice and the feedback they gave on the questionnaire. And last, I want to thank my family and friends for supporting me throughout my study in all possible ways. These past six years I've come across many interesting topics and struggles throughout my period in Wageningen, and I can say that it helped me every bit on the way.

Abstract

This thesis examines the existence of UTPs in the dairy sector in the Netherlands. UTPs are considered disadvantageous for a farmer's business operation as they influence prices, contractual terms and conditions and trade relations negatively. An imbalance of market/bargaining power and hold-up problems are considered as theoretical foundations of UTP occurrence. The thesis focusses on the occurrence and the determinants of UTPs. It builds on Di Marcantonio et al. (2018a, b) who examined the occurrence and determinants of UTPs in the dairy sector of several EU countries.

First, a theoretical analyses is derived from academic literature and policy documents to find UTPs occurring in different stages of contract development. Due to the intensification and concentration of the Dutch dairy market the thesis focusses on UTP occurrence in the contract execution phase. Second, a questionnaire is created to gather data on farm characteristics, dairy production characteristics, contract characteristics and UTPs on 154 dairy farmers in the Netherlands and executed in May 2019. Third, hypotheses are presented that explain the impact of the determinants on UTP occurrence.

This research found that UTPs that occurred most are Unilateral contract changes by the dairy processor (16.2%), the imposition of additional fees or deductions on the farmer's income by the trading party (9.7%) and adherence to obligatory measures not listed in the contract (9.7%).

The determinants used as proxy for the hypotheses are split into two groups based on the measurability of UTP occurrence. A Probit regression is used to analyse the impact of the determinants on different UTP groups. This research found that Labour dependence (0.014), Dairy income dependence (0.004) and Percentage grassland (-0.009) corrected for with Legal status farm (-0.306) and Gender (0.174) have an impact on UTP occurrence that are well measurable. These are in line with the hypothesized outcome. Only Percentage grassland (0.005) impacts the UTP occurrence that are not well measurable, and contradicts the hypothesized outcome. The finding on Percentage grassland is contradictive as it reduces the probability of UTP occurrence in the former model and increases the probability of UTP occurrence in the latter model. The research is difficult to generalize for the Dutch dairy sector as the number of respondents and UTPs considered is to low and one large sample group (<50 dairy cows) is excluded from the study because of the structure and organization of the Dutch dairy market.

Further research can focus on other UTPs outside the scope of Directive 2019/633/EC and account for all (dairy) farmers in the Netherlands, as well as outside of the Netherlands. Nevertheless, this thesis gives insights to UTP occurrence in the dairy sector in the Netherlands, which is relatively high compared to other EU countries analysed by Di Marcantonio et al. (2018a, b).

Keywords: Unfair trading practices, food chain, contracts, cooperatives, dairy farmers, Netherlands

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List of Abbreviations

AIC	Akaike's Information Criteria
AMTF	Agricultural Markets Task Force
BIC	Bayesian Information Criteria
CBS	Central Bureau for the Statistics
EC	European Commission
EU	European Union
FC	FrieslandCampina
MIO	Modern Industrial Organisation theory
MS	Member States
NUTS 2	Nomenclature of Territorial Units for Statistics 2
SD	Standard Deviation
SMEs	Small- and Medium-sized Enterprises
TCE	Transaction costs economics
UK	United Kingdom
USA	United States of America
UTP	Unfair Trading Practices

Introduction

1.1.Problem definition

Unfair trading practices (UTPs) in agri-food supply chains have become an important item in policy debates and academic literature (Basic, 2015; AMTF, 2016; Falkowski et al., 2017). Increasing market power in the agri-food supply chain is considered one of the principal causes of UTPs. Imbalances in market power between contracting parties could be detrimental to the functioning of the single market as stronger parties within the agri-food supply chain could disadvantage weaker parties when negotiating over prices, contractual terms and conditions and trade relations. (Swinnen et al., 2003; Dries & Swinnen, 2004; AMTF, 2016; Di Marcantonio et al., 2018a). However, imbalances in market power are not the only causes of UTPs. According to the European Commission (EC) *"UTPs can broadly be defined as practices that grossly deviate from good commercial conduct, are contrary to good faith and fair dealing and are unilaterally imposed by one trading partner on another"* (EC, 2014 p.2). Examples of UTPs are imposing unequal contract terms or ambiguous contract terms (Di Marcantonio et al., 2018). UTPs adversely affect market outcomes as they lead to market inefficiencies and create uncertainty for all parties, thus hampering innovation and investment (AMTF, 2016; Falkowski et al., 2017; Gorton et al., 2017; Di Marcantonio et al., 2018a). It is estimated that UTPs account for losses of agricultural firms ranging from 2.5 to 8 billion euros annually (Nauta, 2019).

The EC acknowledged the problem with UTPs in the agri-food supply chain and published a Green Paper on UTPs in business-to-business food and non-food supply chain (EC, 2013). The importance of the issue was strengthened by the Agricultural Markets Task Force (AMTF) (2016) recommending to introduce an EU framework legislation and a harmonised baseline of prohibited UTPs in Member States (MS). In December 2016, the Council requested the EC to undertake an Impact Assessment (EC, 2018b) and to organise a workshop to discuss the available scientific literature on methodologies, impacts and regulatory aspects of UTPs (Falkowski et al., 2017). Directive 2019/633/EC was adopted in April 2019 and prohibits UTPs such as late payments for perishable food products, last minute order cancellations or unilateral or retroactive changes to contracts (Euractiv 2019).

The literature shows that UTPs can occur at every stage of the supply chain and can affect any actor along the chain (Falkowski et al., 2017; Gorton et al., 2017; Di Marcantonio et al., 2018a). However, it is often assumed that UTPs predominantly affect smaller actors such as farmers. There is a growing body of scientific literature that relates to the concept and determinants of UTPs, but do not have UTPs as their primary focus (Vavra & Goodwin, 2005; Katchova, 2013; Assefa et al., 2014; Assefa et al., 2015; Falkowski & Ciaian, 2016; Perekhozhuk et al., 2016). Despite the growing body of literature, there is limited empirical evidence that recognizes the multidimensionality of the occurrence and the extent of UTPs (EC, 2018b; Schebesta et al., 2019). Only few studies explain the possibility of unfair behaviour by the farmers' commercial partner (Gow & Swinnen, 2000; Renda et al., 2014; Falkowski et al., 2017; Di Marcantonio et al., 2018a).

The most recent body of research by Di Marcantonio et al. (2018a, b) focuses specifically on the dairy sector as it is subject to intense policy attention in the EU. For instance, the Milk Package (EC 2018d) was implemented to strengthen the position of dairy producers in the supply chain and to counter the high degree of market concentration of the processing and retailing stages in the dairy supply chain system (Ihle et al., 2017; Di Marcantonio et al., 2018a). The dairy sector is particularly prone to UTPs as the product is perishable, leaving the dairy farmers with limited negotiation power (Ihle et al., 2017). Di Marcantonio et al. (2018a, b) had a closer look at the occurrence and the determinants of UTPs in the

dairy sector in Spain, France, Germany and Poland. They found that UTPs occur most in the contract content followed by contract negotiation and contract execution.

The Netherlands is one of the top EU producers in dairy, with a share of 8,4% of total production ranking fourth in the EU after Germany, France and the UK (Ihle et al., 2017). Therefore, it is interesting to expand the studies executed by Di Marcantonio et al.(2018a, b) to the Netherlands. While Bunte et al. (2009) and Oosterkamp et al. (2013) found evidence of UTPs occurring in other agricultural sectors in the Netherlands and UTPs are on the political agenda for multiple cabinets in a row (Nieuwe Oogst, 2016; Nieuwe Oogst, 2018), there is little information about the occurrence of UTPs in the Dutch dairy sector (Liere, 2016; LTO, 2016). This study contributes to the literature by analysing the occurrence and the determinants of UTPs arising in different contractual arrangements for dairy farmers in the Netherlands.

1.2. Research objective and questions

The objective is to analyse the occurrence and determinants of UTPs in the dairy sector in the Netherlands in different phases of contract development, by gathering surveys filled in by Dutch dairy farmers.

Main research question: What is the existence of UTPs in the dairy sector in the Netherlands?

In order to answer the main research question, the following sub-research questions will be answered:

1. What are the theoretical reasons for the existence of UTPs?
2. What is the structure and organization of the Dutch dairy market?
3. What is the occurrence of UTPs in the Dutch dairy sector?
4. What are the determinants of UTPs?

1.3. Structure

Chapter 2 will describe the theoretical framework based on the first sub-research question. It will be based on a conceptual framework, empirical literature and it presents the directive 2019/633/EC. The conceptual framework will represent two theories, namely Modern Industrial Organisation and Incomplete Contract Theory focused on Transaction costs economics, and how UTPs can be interpreted based on these theories. The empirical literature will categorize the existing papers on UTPs according to the two theories. The Directive 2019/633/EC shows the prohibited UTPs. Chapter 3 refers to the second sub-research question and provides an overview of the structure and organization of the Dutch dairy market and compares the dairy market developments to other EU countries which is used as input for data collection and analysis. Chapter 4 discusses the methodology for data collection and analysis. Chapter 5 presents the results referred to the third and fourth sub-research question. Chapter 6 answers the main and sub-research questions in the conclusion and chapter 7 provides a general discussion and a recommendation for future research.

2. Theoretical Framework

This chapter presents a theoretical framework that explains the theoretical reasons for the existence of UTPs. It consists out of three parts. The first two sections discuss different theories that can explain the existence of UTPs. The strands of theory that will be discussed are Modern Industrial Organisation and Incomplete Contract Theory, in particular Transaction Costs Economics. Each section will give a brief introduction on the theory and is followed by a causal explanation of UTPs and the forms these UTPs could take according to the theory. Section three categorizes and structures existing empirical literature on UTPs according to these two strands of theory. The fourth and final section presents the legislation at EU level, explained by Schebesta et al. (2019).

2.1.UTPs in the light of Modern Industrial Organisation

Modern Industrial Organisation (hereafter, MIO) theory explains the organisation of the firm and industries (Carlton & Perloff, 2004). In this thesis, the discussion of agricultural market structures is of great importance as agricultural markets are predominantly imperfectly organised and are imperfectly competitive, also called oligopolies or oligopsonies depending on the stage in the supply chain (Sexton, 2000; Hudson, 2007). Most agricultural markets have an oligopsonistic market structure because there are many sellers (agricultural producers) and only few buyers (agricultural processors) in the supply chain (Carlton & Perloff, 2004). In these highly concentrated market structures a small number of firms (agricultural processors) can act independently, set prices above marginal costs and affect a rival's price setting (Azzam, 1997; McCorriston, 2002; Sheldon & Sperling, 2003; Carlton & Perloff, 2004; Di Marcantonio et al., 2018b). This introduces market power wherein 'stronger' firms can manipulate prices or other contractual terms in the short run by influencing or directing the other firms' behaviour. One case of market power is bargaining power, in which threat is used to obtain a concession from the trading party (Kirkwood, 2005; Bonanno et al., 2018).

Oligopsonistic market structures, in which imbalances in market/bargaining power arise, can potentially lead to UTPs as the weaker party has to accept disadvantageous terms or prices in order to make a trade. (Käkhönen, 2014; Bonanno et al., 2018). With this imbalance and the ability to influence price setting, agricultural producers are considered 'price takers' (EC, 2018b; Baltussen et al., 2019). Examples of UTPs imposed on farmers as a result of an imbalance of market/bargaining power are; (imposed) unequal contract terms, supply constraints imposed on the farmer by the processor or unilateral retroactive changes of contract terms (Di Marcantonio et al., 2018a).

Unequal contract terms could be the difference in commitment or liability which the farmer and processor have to uphold in a contract. It can also refer to vaguely and ambiguous described contractual elements of which the party with more bargaining power can gain an (economic) advantage, by interpreting them unfairly ex-post (Sexton, 2017; Bonanno et al., 2018). Supply constraints imposed on the farmer could impact the optimal production efficiency of the farm negatively by refusing fresh products. This in turn can create a societal welfare loss (scarcity) of the fresh produce (Bonanno et al., 2018). Unilateral retroactive change of contract terms is also considered a UTP as it damages the relationship. It allows the stronger party to capture the welfare gains of the unilateral contract change and transfers the losses towards the farmer thus creating a deadweight loss. Unilateral contract changes can therefore be considered abuse of the farmers economic dependence (Fałkowski et al., 2017).

2.2.UTPs in the light of Incomplete Contract Theory

Transaction costs economics (hereafter, TCE) focuses on diminishing transaction costs between parties by either vertically integrating the business activity or by contractual agreements (Klein et al., 1978; Williamson, 1979). Common in the agricultural sector are incomplete contracts which are characterised by uncertainty. Not all events, contingencies and/or decisions can be described prior to signing the

contract due to uncertainty. Examples of these uncertainties are weather and market instability. Therefore, parties cannot describe, ex ante, what might occur in the relationship whilst the contract is in place. This leaves both parties to deal with scenarios ex post in which there is room for certain actions, negotiations and decisions to be made outside the contractual agreements. Uncertainty further increases because actors are rationally bounded and may act opportunistically or not act at all out of fear of retaliation (Gorton et al., 2017). Opportunistic behaviour in the form of rent seeking comes forth when relationship-specific investments have been made. These are investments made by parties that have less (economic) value outside the relationship than within. This difference is called the quasi-rent and can be used by one party to gain an economic advantage over the other party. An example of quasi-rent is the imposition of additional fees or deductions of price- or income agreements the farmer and the trading party have made. This is called post contractual opportunism (Wu, 2006, 2013).

When a relationship-specific investment has been made there is a chance of a hold-up problem, in which "*a 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 & Roberts, 1992, p.136). In the agri-food sector it often happens that contracts are shorter than the life-span of an investment on the farm. Therefore, farmers make themselves dependable on the trading partner, with little to no option for an alternative trading partner. This makes farmers vulnerable and susceptible to a hold-up by the trading partner (Di Marcantonio et al., 2018a). Hold-ups therefore represent a form of UTPs in the context of TCE.

Probable causes of a hold-up problem can be asset specificity, behavioural uncertainty and the frequency of exchange. A specific form of asset specificity, relevant in the agricultural sector is temporal asset specificity. It relates to the perishability of the product (Crespi et al, 2012). Due to the risk of spoilage, agricultural commodities must be collected by the trading party, which in most cases are processing companies, within a certain time range. This makes the farmer (economically) dependent on the processor as the quality and value decreases if the commodity is not collected. Behavioural uncertainty relates to the likelihood of opportunistic behaviour by the contracting party. This behaviour opens the possibility to transfer risks and costs to the weaker party to obtain an economic advantage. One form of opportunistic behaviour is delayed payments (Gow & Swinnen, 1998). If the uncertainty in the relationship outcome is high and trust is low, fear arises and a possible hold-up occurs (Granja & Wollni, 2019). High frequency of exchange could potentially diminish the chance of a hold-up due to the repeated interaction, but it can also increase the potential occurrence of a hold-up. The fear of damaging a long-standing relationship with repeated transactions due to the potential use of costly and time-consuming dispute resolution mechanisms may lead to inaction by the weaker party, which often relates to the fear factor (Butler & Herbert, 2014; Cafaggi & Iamiceli, 2017; Fałkowski et al., 2017).

2.3.Empirical literature

This section presents empirical evidence from previous studies regarding UTPs and categorizes them based on MIO and TCE. The overview can be found in table 1. First, empirical evidence is presented linking UTPs to MIO. UTPs in this strand of the literature relate to the imbalance of market/bargaining power and often take the form of unequal contract terms, supply constraints imposed on the supplier or unilateral retroactive changes of contract terms. Second, literature related to the TCE is presented. Here UTPs mainly refer to the occurrence of hold-up problems. Some studies relate both to MIO and TCE and refer to both theories in table 1.

Table 1 Empirical studies related to UTPs

Theory	Study	Study objective	Geographical focus	Number of Observations	Types of UTPs identified	Causes of UTPs identified	Findings	Method of analysis
MIO	Lindgreen et al. (2004)	Compare transactional marketing practices and influencing factors in the pork sector	The Netherlands	7 in-depth interviews in the supply chain	Lack of information provision	Imbalance of market power	Producers lacked information exchange and trust with processors	Qualitative analysis
MIO	Bunte et al. (2009)	Analyse the Price setting in the agricultural market	The Netherlands	10 in-depth interviews; suppliers and retail distributors	Unilateral change of contract terms	Imbalance of market power	Buyer (retailer) unilaterally changes contract terms; threats of de-listing products by buyer (retailer)	Qualitative analysis
MIO	CIAA-AIM (2011)	Analyse the occurrence and impact of UTPs in the agricultural market	15 EU member states	686 processing and retail companies	Unilateral change of contract terms; unequal contract terms; fear factor	Imbalance of market/ bargaining power	96% of companies were exposed to UTPs. Non-compliance of contractual terms (84%); threats to obtain unjustified advantage (77%); unilateral deductions of payments (63%); no action taken when confronted by UTPs because of fear of commercial retaliation/sanctioning (65%)	Count
MIO	CNC (2011)	Analyse the occurrence of UTPs in the agricultural market	Spain	47 manufacturers ; 10 retail distributors	Unilateral change of contract terms; unequal contract terms; imposition of supply constraints	Imbalance of market/ bargaining power	Suppliers suffered retroactive modifications of contracts and the threat of delisting (65%); commercial conditions not specified in the contract (35%)	Count

MIO	Malak-Rawlikowska et al. (2019)	Analyse the impact of bargaining power on the size of dairy farms and contractual conditions.	Poland	300 dairy farmers	Unequal contract terms (no contract provided); Imposition of supply constraints (by input supply reduction)	Imbalance of bargaining power	Farmers with strong bargaining power have larger herds and farms (31.5 dairy cows) than farmers with weak bargaining power (24.7 dairy cows) and can get better conditions with feed more feed suppliers (83% vs 57%).	Tobit model
MIO, TCE	McCluskey & Rourke (2000)	Assess the current relationship between large purchasing companies and SMEs in the fresh and frozen fruit and vegetables sector	USA	19 in-depth interviews with SMEs	Unequal contract terms; Unilateral contract changes	Imbalance of market power; behavioural uncertainty; frequency of exchange	Lack of explicit co-ordination or explicit contracting in the sector; occurrence of behavioural uncertainty	Qualitative analysis
MIO, TCE	UK Commission on Competition (2008) Davis & Reilly (2010)	Investigate unfair practices between retailers and suppliers in the agri-food supply chain	UK	456 suppliers	Unilateral contract changes (retrospective price adjustments); buyer did not fulfil the contract (delayed payments); adhere to obligatory measures that were not in the contract (additional services required)	Imbalance of market power; hold-up problem	Between 37% and 48% of suppliers experienced delayed payments, excessive payments, additional services required and retrospective price adjustments	Count
MIO, TCE	Copa Cogeca (2013)	Analyse the types and occurrence of UTPs in the EU	21 EU countries	434 professional firms in agri-food chain, of	17 types of UTPs considered	Imbalance of market power; hold-up problem	The occurrence of UTPs increased in 5 years. 94% of all farms were affected by at least one UTP; 45% of farmers were occasionally exposed to all 17 UTPs mentioned in the study. The 5 most occurring are (i) imposing obligatory payment for promotional purposes (59%); (ii)	count

				which 214 farmers			unequal contract terms (56%); (iii) no contract signed (51%); (iv) threatening of business disruption for economic advantages (51%); (v) imposing obligatory payment for proprietary activities (48%)	
MIO, TCE	Basic (2015)	Analyse UTPs in the banana sector	Costa Rica	60 qualitative interviews	Unequal contract terms; imposition of supply constraints; Unilateral change of contract terms	Imbalance of market power; hold-up problem	Buyers make use of one-sided clauses; impose supply constraints with last-minute cancellations and quality claims and rejects; no payment if not complying with required volumes or quality; producer gets charged extra costs	Qualitative analysis
MIO, TCE	Di Marcantonio et al. (2018a)	Analyse the occurrence of UTPs in the dairy supply chain	Spain, France Germany and Poland	1248 dairy farmers	17 types of UTPs that occur (i) in the contract content; (ii) during contract execution; (iii) after contract finalization	Imbalance of market power; asset specificity; hold-up problem	UTPs encountered in all three categories; at least one UTP 97.7%; at least two 54,2%; at least three 30.2% of the sample. Large regional differences	Count
TCE	Fischer et al. (2010)	Analyse the relationship between trading partners in the agri-food supply chain and the quality and frequency of information	6 EU countries	1442 respondents of which 962 farmers	-	Frequency of exchange	There is strong evidence (<1% significance) that the quality and frequency of information positively influences the relationship between two trading partners	Binary logit model
TCE	Bhattacharya, Singh, & Nand (2015)	Analyse whether opportunistic behaviour is positively influenced by TCE in outsourcing	Australia	51 pairs of managers, 1 from the buyer organization and their	-	Asset specificity; behavioural uncertainty;	Frequency of exchange has a positive effect on buyer opportunism. Asset specificity and behavioural uncertainty not.	Degree-symmetry approach

		arrangements in the labour market		counterpart in the suppliers organization		frequency of exchange		
TCE,	EC (2018b)	Analyse the relationship between UTP related filing complaints and commercial sanctions.	EU	-	Fear factor	Fear factor, related to imbalance of market power or hold-up problem	67% of respondents feared negative consequences by their trading partner in case of filing a UTP related complaint.	Count
TCE	Granja, Wollni (2019)	Analyse the effect of opportunistic behaviour on farmers' trust.	Ecuador	Sample of 383 broccoli producers interviewed. 90 participants	Delayed payments as a form of rent-seeking	Behavioural uncertainty; hold-up problem	Negative signal of opportunistic behaviour (delayed payments) has no influence on trust. Positive signal of opportunistic behaviour (payment on time) increases trust significantly.	Probit model

Source: created by Author

2.4.Directive on Unfair Trading Practices

This section presents the prohibitions on UTPs in the Directive 2019/633/EC (Table 2). The 'black' practices refer to UTPs that are prohibited in all member states in the EU. The 'grey' practices refer to UTPs that are allowed but only if they are expressed in clear and unambiguous terms in the contract (Schebesta et al., 2019).

Table 2 UTPs included in Directive 2019/633/EC

Black Practices
Payments later than 30 calendar days for perishable products
Payments later than 60 calendar days for non-perishable products
Last minute cancellations of orders for perishable products, in such short notice (60 days from delivery) that no commercially viable alternative can be found
Unilateral and retroactive changes to the terms of the supply agreement, concerning the frequency, timing or volume of the product
Imposition of payment for food wastage on the buyer's premises not caused by the supplier
Sharing or misuse of confidential information, relating to the supply agreement
Refusal of a written contract (or the refusal to provide sufficiently detailed supply terms)
retaliation or threat of retaliation against the supplier
Grey practices
Return of unsold food products to the supplier or without paying for those unsold products
Charges as a condition for stocking, displaying or listing food products
Suppliers paying for the promotion of food products sold by the buyer
Suppliers paying for the marketing of food products by the buyer

Source: Created by Author based Directive 2019/633/EC and Schebesta et al. (2019)

3. Dutch dairy market

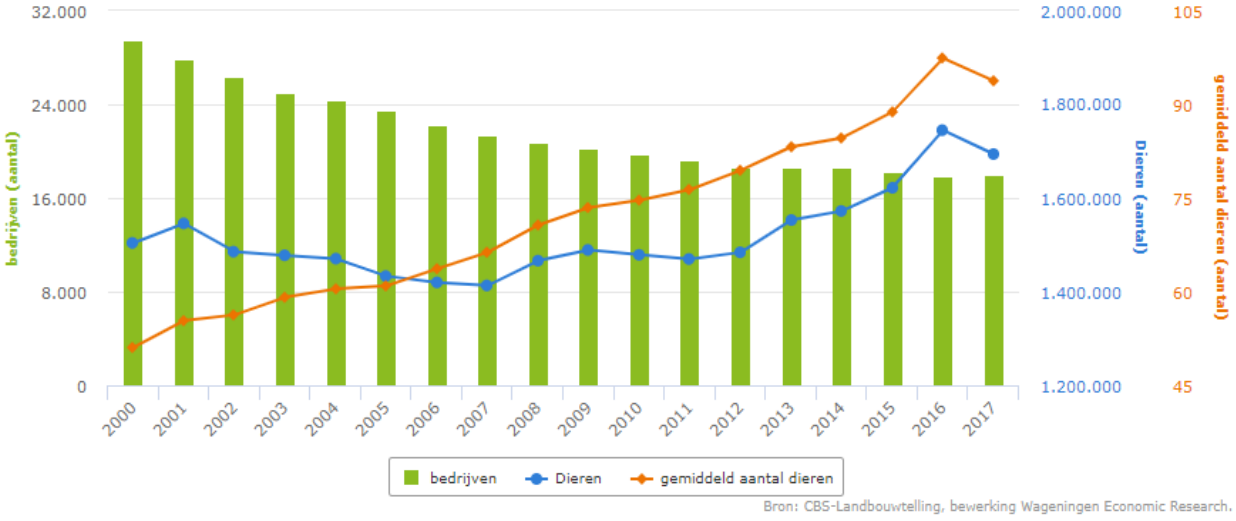
This chapter will analyse the structure and the organization of the Dutch dairy market. The chapter will consist of a general description of the Dutch dairy market and a comparison with the dairy sector in other EU countries. First, the general description of the Dutch dairy market will give insights on herd size, farm size and farm location of the Dutch farms. It will also focus on the structure and organization on the dairy processors side. Second, the comparison with the dairy sector in other EU countries shall include the evolution of milk deliveries, national herd sizes and the evolution of national milk prices.

3.1.Structure and organisation

The Dutch dairy market is highly concentrated and intensified and is an important sector in the Dutch agricultural market. With a value of €5 billion the dairy sector accounted for 17.4%% of the total value of agricultural production in the Netherlands in 2018 (ZuivelNL, 2019). Economically, it is by far the most important livestock sector. In 2018, the sector produced around 14.1 billion kg of milk from 1.62 million dairy cows (ZuivelNL, 2019). In 2018, the Netherlands had 16,963 dairy farms with an average of 96 dairy cows per farm (ZuivelNL, 2019).

As can be seen in figure 1, the number of animals (blue line) has seen a 23,5% increase from 2007 to 2016 whereas it decreased with 3% in 2017. The number of farms in the Netherlands (green bars) decreased steadily since the turn of the century with a 39% decrease in total between 2000 and 2017. The number of dairy cows per farm (orange line), in turn, increased to 94 dairy cows per farm on average between 2000 and 2017.

Figure 1 Number of dairy farms, livestock and average livestock per farm in the Netherlands, 2000-2017



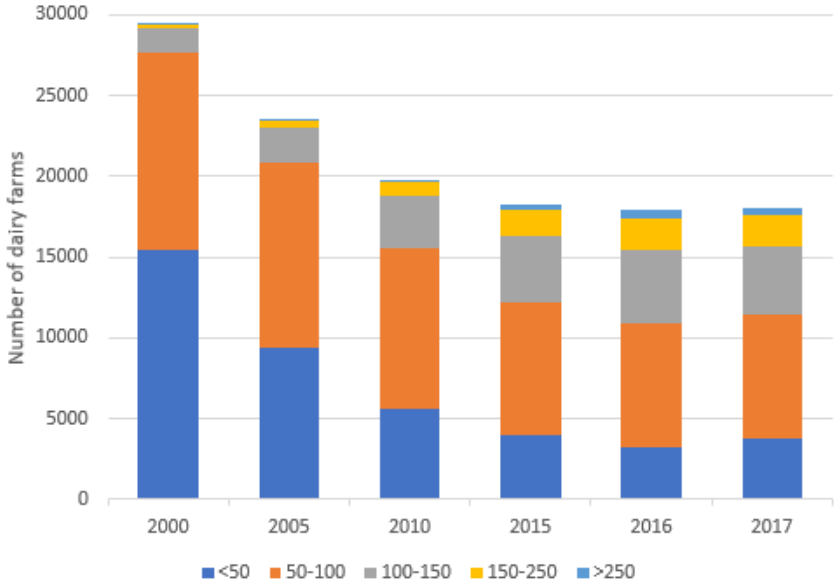
Source: CBS-Agricultural statistics, edited by Wageningen Economic Research

Figure 2 specifies the number of dairy farms per size category. The category <50 dairy cows shrunk with 75% between 2000 and 2017. Most dairy farms had between 50 and 100 dairy cows in 2017. There is also a large increase in the larger categories with an increase of 567% in the category 150-250 dairy cows and an increase of 995% in the category >250 dairy cows between 2000 and 2017.

The number of dairy farms per province differ substantially (figure 3). The most dairy farms are located in Overijssel (18%), Gelderland (17%), Friesland (15%) and Noord-Brabant (14%), which are considered rural provinces. Together they account for 64% of all dairy farms. Zeeland and Flevoland have the lowest number of dairy farms.

The dairy processor side in the Netherlands existed of 25 processing companies with in total 53 production locations in 2018. 86% of all milk deliveries is processed by cooperatives (Peerlings et al., 2010; Bijman et al., 2012) Figure 4 shows the geographical distribution of the processing plants in the Netherlands in 2018.

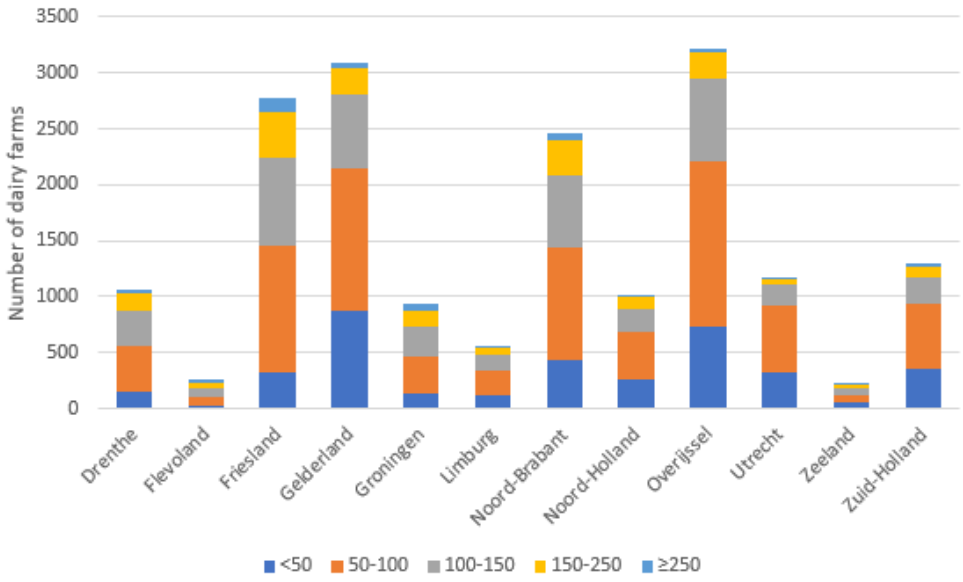
Figure 2 Dairy farms in the Netherlands categorized in herd sizes, 2000-2017



Source: Agrimatie.nl (2019), edited by Author

FrieslandCampina (hereafter FC) is by far the largest processor in the Netherlands with 21 processing plants distributed over the country. Out of the 25 dairy processing companies, 6 are cooperatives with FC being the largest, followed by CONO Kaasmakers, DOC, Rouveen Kaasspecialisten, Arla Foods and Delta milk. Hochwald NL is also a cooperative, but the parent company in Germany is not (ZuivelNL, 2017 Peet et. al, 2018). All other dairy companies are privately owned. In 2018 14 billion kilograms of milk was delivered to the processing plants, which is a little bit less than in 2017 (table 3).The difference between the produced and processed milk, 100 million kilograms of milk, was used on-farm.

Figure 3 Dairy farms in the Netherlands categorized per herd size distributed per province in 2017



Source: Agrimatie.nl (2019), edited by Author

Figure 4 Distribution of milk processors in the Netherlands in 2018

Source: (ZuivelNL, 2019)

Key figures	2016	2017	2018
Dairy processors	25	25	25
Processing plants	53	53	53
Of which cooperatives	27	27	27
Of which private	26	26	26
Processed milk (mln kg)	14.172	14.143	14.000

Table 3 Key figures of dairy processing companies in the Netherlands, 2016-2018

There are several dairy farm associations in the NL.
Table 4 gives an overview. Associations play an important role in the dairy sector as they set the policy agenda in the sector for research, problems to be tackled and contract and trade negotiations.

Table 4 Structure and organisation of the Dutch dairy market

ZuivelNL	Established by LTO and NZO in 2014 and acknowledged by the EU as branch organisation for the Dairy sector.
LTO/ZLTO	Interest group in Agriculture representing multiple sectors including the dairy sector
NMV	Nederlandse Melkveehouders vakbond: interest group for Dairy producers
DDB	Dutch Dairymen Board: interest group for Dairy producers
NZO	Nederlandse Zuivelorganisatie: branch organisation of 13 processing companies
Duurzame Zuivelketen	Coalition between NZO and LTO focused on a sustainable and 'future-proof' dairy sector. Contains an advisory board consisting out of 16 external parties
Source: (Peet et al., 2018), edited by Author	

3.2.Comparison to other EU countries

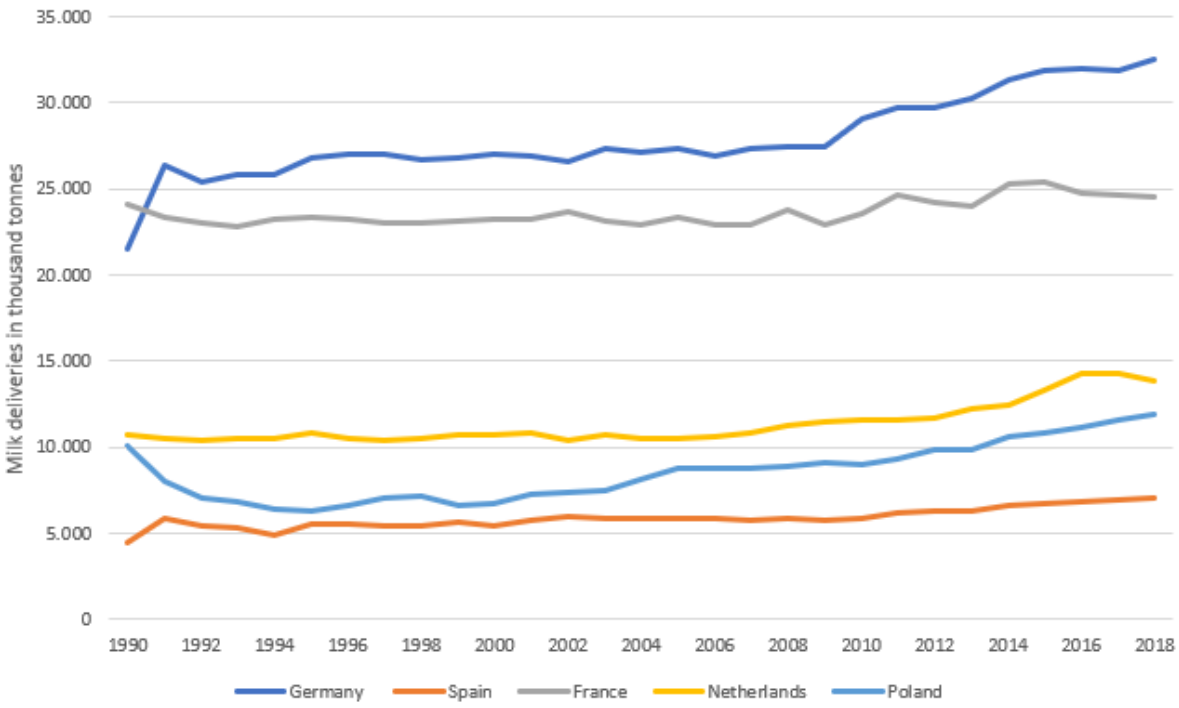
This section shows the dairy sector in the Netherlands compared to the other studied EU countries and regions by Di Marcantonio et al. (2018a). Figure 5 shows the increase in milk deliveries for the studied countries as comparison. Figure 6 shows the decline of the number of dairy cows in the studied countries since 1990. There is a decline in the herd size in all studied countries, although in some countries, such as Germany and Poland, the decrease happens at a faster rate than in others. Table 5 shows the average herd size and milk yield per cow for the studied countries and the main dairy producing regions. The average herd size per farm and milk yield per cow on average in the Netherlands are higher than in the other studies countries, making the Netherlands a highly concentrated and intensified dairy producing country. Figure 7 shows the evolution of the milk price in the studied countries. It is clearly visible that prices in all countries spiked and plummeted between 2007 and 2010 (global food crisis) and then again between 2014 and 2018 (quota abolishment).

Table 5 Comparisons of the dairy sector between studied countries

Country	Germany	Spain		France	Poland	Netherlands
Average herd size	66	59		59	18	90
Milk yield kg/cow	7574	7684		6963	5741	8706
Region NUTS 2	Bayern	Galicia	Asturias	Normandie	Podlaskie	Gelderland
Average herd size	39	44	59	66	17	82
Milk yield kg/cow	6699	8124	5593	6486	5588	8728

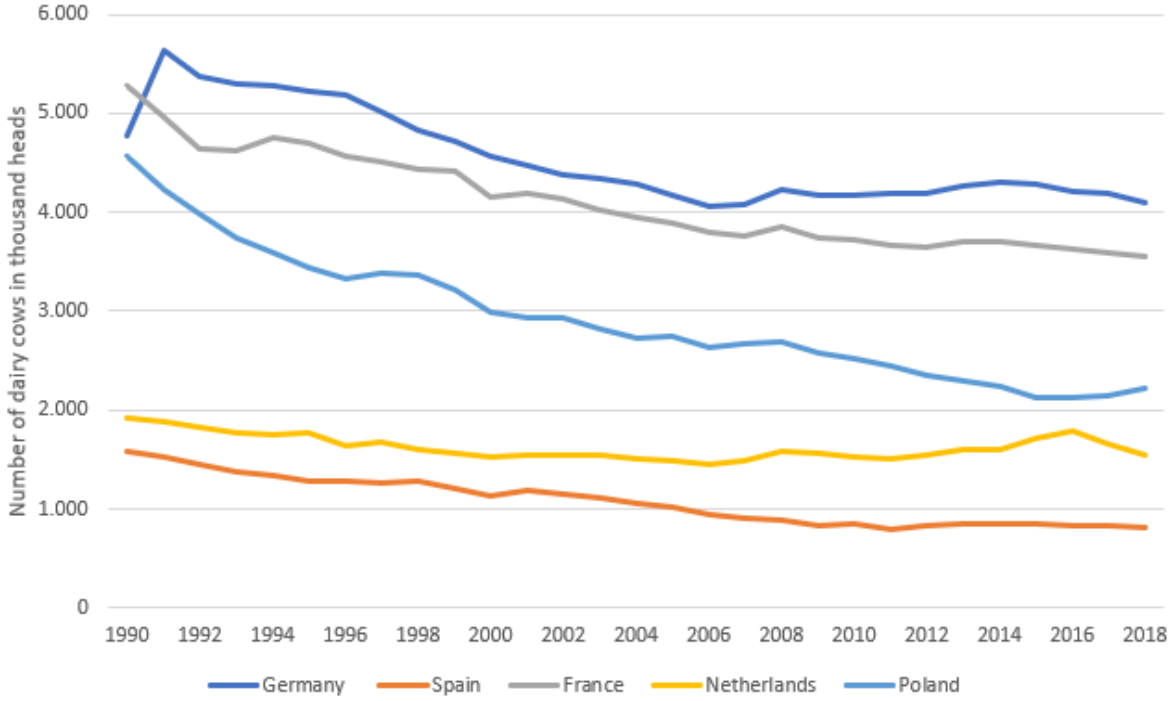
Source: Created by author based on EU Dairy Farm Report (DG Agri, 2018)

Figure 5 Evolution of milk deliveries in Germany, Spain, France, the Netherlands and Poland (1990-2018)



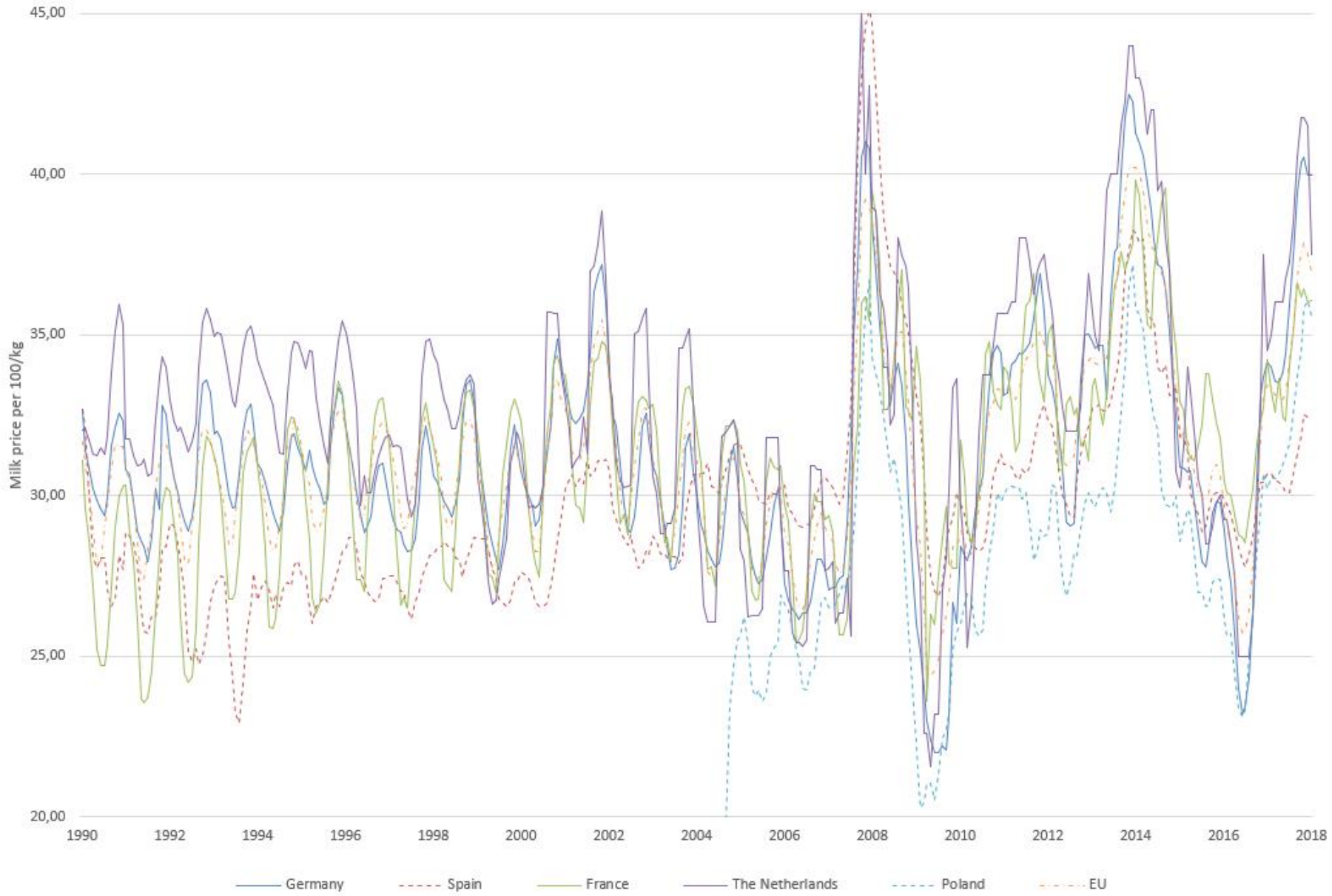
Source: Created by author based on Agri-short-term-outlook-balance-sheet 2019 (DG AGRI, 2019b).

Figure 6 Evolution of number of dairy cows in Germany, Spain, France, the Netherlands and Poland (1990-2018)



Source: Created by author based on Agri-short-term-outlook-balance-sheet (DG AGRI, 2019b).

Figure 7 Evolution of milk prices (per 100/kg) in Germany, Spain, France, the Netherlands, Poland and the EU average (1990-2018)



Source: Created by author based on EU Milk Market Observatory (DG AGRI, 2019a) .

4. Data and Methodology

This chapter presents the data collection method and data analysis carried out as part of this thesis. It was based on a dairy farm questionnaire following the design of Di Marcantonio et al. (2018a). The questionnaire was shortened and made country-specific for the Netherlands[1]. The data were collected in May 2019 and include information for 2018 and 2014. These two reference years were used because 2018 was the most recent year and 2014 was the year before the milk quota abolishment, which was expected to have had major implications for the structure and conduct of the Dutch dairy sector. First, the methodology for data collection is explained, including the sample design, representativeness of the sample and the questionnaire execution phases. Second, the methodology for analysing the determinants for UTPs are presented. These will include hypotheses derived from theory and descriptive analysis on the model variables. A Probit model is presented which focuses on the contract execution phase, independent variables from the hypotheses and the UTPs from Directive 2019/633/EC.

4.1. Data collection

4.1.1. Sample design

The study implemented a stratified multi-stage sampling procedure based on herd-size classes of Dutch dairy farmers. The study was executed nationwide. The herd-size distribution in the Dutch dairy sector was taken from the CBS. It consists out of 5 dairy cow classes namely; <50, 50-100, 100-150, 150-250 and >250.

The first stage consisted of defining the sample range. From this distribution the smallest class <50 was eliminated from the sample because of upscaling and intensification in the dairy sector. This class has shrunk over 75% between 2000 and 2017 and is expected to decline even further in the coming years. (WEcR, n.d.).

The second stage consisted of selecting the dairy farms. For this a regularly updated subscription list of farmers from an agricultural news company was used for the sample in order to obtain contact details for the dairy farmers[2]. The study aimed to conduct at least 150 interviews, divided among the size distribution classes presented in figure 2.

4.1.2. Representativeness of the sample

This section compares the sample results with the actual Dutch dairy market size distribution (main indicator), provincial distribution and farmer age distribution. Validating the sample internally via multiple indicators is possible, as the Dutch dairy market is very well monitored and documented.

A total of 154 interviews were held. Table 6 shows the distribution of the sample per size class. Even though the smallest class was excluded *ex ante*, there were still 5 dairy farmers from that category in the sample of which 3 quit dairy farming since 2014. The sample obtained is representative for the Dutch dairy farming sector for farms operating on at least 50 ha[3].

[1] The questionnaire is translated to Dutch and made understandable for the target group, Dutch dairy farmers. The questionnaire can be found in Appendix 1

[2] This subscription list consisted of 1500 dairy farmers in the Netherlands which represents roughly 10% of the total dairy farm population. Of this subscription list, classifications of herd size were made and within each size class farmers were ordered alphabetically. Per size class, every 10th farmer in the class was selected and contacted. This was done until the predefined sample size was matched.

[3] Only 5 farms smaller than 50 ha were included in the sample, so that for this size class it the sample is not representative.

Figure 8 presents the distribution of dairy farms per province in the Netherlands. The sample obtained is fairly representative for the dairy farm population per province with the exception of Groningen, Friesland and Noord-Brabant, where the farm population in the sample deviates at least 4% from the actual dairy farm distribution

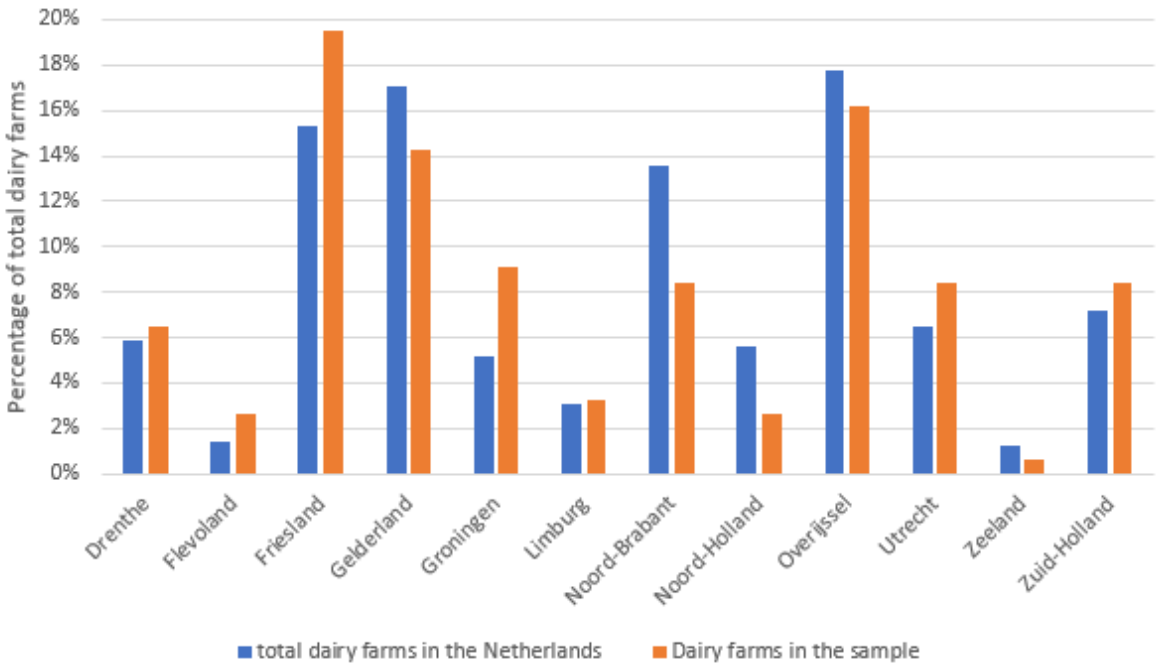
Table 6 Sample description and design of Dutch dairy farmers

Farm size (ha)	2017 (NL)	% in total farms > 50 ha (NL)	Sample	% of sample in total
0-50	3759		5 (3 who quit)	3%
50-100	7645	53%	77	50%
100-150	4307	30%	46	30%
150-250	1869	13%	19	12%
>250	482	4%	7	5%
Total	18062 (14303 without small farms 0-50)		154	

Source: Created by Author based on questionnaire results and cbs.nl (2019)

Figure 9 presents the age distribution of the dairy farmers in the sample in comparison with the average age of all farm managers in the Netherlands. The distribution is a little bit skewed, with an underrepresentation of the groups 35-44 and 65-74, and an overrepresentation of the group 45-54.

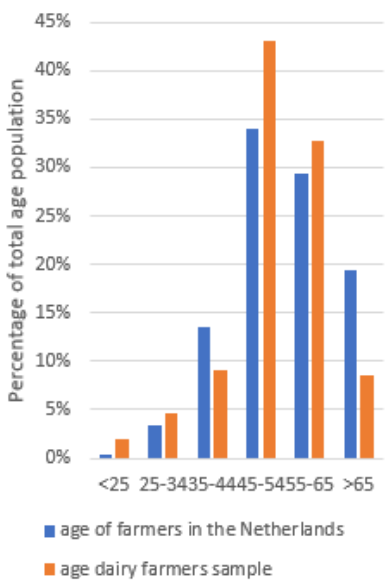
Figure 8 Sample representativeness of provincial dairy farm distribution in the Netherlands in 2018



Source: Created by Author based on questionnaire results and Agrimatie.nl (2019)

4.1.3. *Questionnaire*

Figure 9 Sample representativeness of dairies farmers' age in the Netherlands in 2018



Source: Created by Author based on questionnaire results and cbs.nl (2019)

The questionnaire (appendix 1) was developed based on the study and questionnaire of Di Marcantonio et al. (2018a) which contained multiple chapters focusing on (i) farm characteristics, (ii) dairy production characteristics, (iii) contract characteristics and (iv) UTPs. The questionnaire was shortened substantially in part (iii), contract characteristics due to the nature of the organization of the Dutch dairy market with its dominance of cooperative dairy processors (Bijman et al., 2012). Contract characteristics for cooperatives are the same for all members, and private contracts are difficult to obtain due to the highly competitive market. The introduction of the milk package 1308/2013, made dairy contracts compulsory and therefore difficult to negotiate(EP, 2013). The section on UTPs was shortened as it partially focuses on Directive 2019/633/EC and to the characteristics of the Dutch dairy market. There is an addition made following suggestions from experts in the Dutch dairy market. This addition considers milk refusal as a possible UTP, being an exception for the category 'dairy processor did not fulfil the contract'.

The questionnaire was conducted through phone calls in which the interviewer noted the answers on a pre-defined answer sheet with multiple drop-down menu's. This allowed the interviewers to easily obtain and structure the answers given. Respondents were asked to provide answers for two years, namely 2018 and 2014. The rationale behind this is to capture the potential effect of the abolishment of the milk quota which was expected to have a substantial effect in the Netherlands.

The data collection process involved the following steps and took place in May and June of 2019:

1. **Testing the questionnaire – pre-piloting.** In this phase the survey was developed over a period of 1 month (16/4-16/5). The questionnaire design had two conditions. First, the interview may take no longer than 30 minutes. Second, the interview must be possible to conduct through a phone call in which the interviewer noted the answers down via an easy and accessible format. In the development stage multiple stakeholders from within the sector were asked to comment on the questionnaire. The aim of pre-piloting was to evaluate the feasibility of conducting the interviews in the Dutch language and to test whether the questionnaire was well adapted to the Dutch dairy sector as well as to test the comprehensiveness and understanding of the questionnaire.
2. **Pilot phase.** In this phase, 7 interviews were carried out. Instruction of the enumerators on interviewing technique and understanding of the questionnaire was executed upfront by the researcher. The pilot phase period lasted 2 days (20th and 21st of May). The aim of this phase was to evaluate whether the questionnaire set-up (filters, quality, consistency controls and translations) had been performed correctly according to the initial instructions.
3. **Main fieldwork.** This phase was separated into two parts, first the main data collection was performed, which took 15 days in total (22/5 – 5/6). Second, after a quality check, corrections were made through a second round of interviews with the same respondents. This lasted from

the 17th to 21st of June. The average interview time was 34 minutes[4]. In total the fieldwork lasted from the 22nd of May until the 21st of June.

4.2. Data analysis

This section discusses the methodology for analysing the determinants of UTPs. Hypotheses and a Probit model are used to find a relationship between the occurrence of UTPs and several determinants of production and contract characteristics in the Dutch dairy market. The Probit model is estimated with the statistical program STATA and focuses only on the contract execution stage because of the structure of the Dutch dairy market as explained in section 3.1.

4.2.1. Determinants of UTPs

This section presents hypotheses of the determinants that can potentially influence the occurrence of UTPs in the contract execution phase. These hypotheses are based on the theoretical framework and the existing empirical evidence on UTPs. The hypotheses can influence an increase (more) or decrease (fewer) in the occurrence of UTPs.

Hypothesis 1: The larger the size of the dairy farm, the fewer UTPs occur on that dairy farm.

The AMTF (2016) reported that Small-and medium-sized enterprises (SMEs) are more vulnerable to UTPs than larger enterprises due to their resource limitations, asset specificity and high switching costs. This is confirmed by Falkowski et al.(2017) and Gorton et al. (2017). Therefore, we expect that when the farm size increases the occurrence of UTPs decreases.

Hypothesis 2: The longer a contract runs between a dairy farmer and the dairy processor, the fewer UTPs occur on that dairy farm.

From transaction costs economics, frequency of exchange, behavioural uncertainty and asset specificity influence the occurrence of UTPs. It is argued by Falkowski et al. (2017) that with frequent exchanges and long-lived relationships UTPs are less likely to occur for that particular farmer, meaning it decreases the occurrence of UTPs. However, Di Marcantonio et al. (2018b) found a positive relation between the occurrence of UTPs and the contract length. Therefore, we expect that the effect of contract length on the occurrence of UTPs is ambiguous. Contract length can both increase and decrease the occurrence of UTPs.

Hypothesis 3: The higher the number of competing dairy processors are active in the region of the dairy farmer, the fewer UTPs occur on that dairy farm.

In an oligopsonistic market structure the limited number of trading partners influences the switching costs negatively (Crespi et al., 2012). This means that farmers are less able to switch trading party and become more prone to UTPs. Therefore, the geographical distribution of processing companies and the location of the dairy farm influences the occurrence of UTPs. We expect that the occurrence of UTPs decreases when the number of dairy processing companies increases in the regions the dairy farmer and dairy processing companies are located.

Hypothesis 4: The more dependent a dairy farmer is on their dairy business, the more UTPs occur on that dairy farm.

From MIO, an imbalance of market power creates the opportunity to influence the trading partner's contractual relationship unequally (Di Marcantonio et al., 2018a). If the farmer is completely dependent

[4] This includes a set of questions asked at the end of the interview but were not included in this research as it is outside the scope of this research.

on their dairy business instead of having other sources of income, such as other (non-) agricultural income besides dairy, they become more vulnerable to the imbalance of market power. Examples are off-farm income by the farmer's family or through off-farm labour, or agricultural income through hogs production. This imbalance in market power introduces the possibility to abuse the economic dependency of the farmer and this could introduce UTPs more quickly. Therefore, we expect that the occurrence of UTPs increases when the farmer is more dependent on their dairy business.

Hypothesis 5: When a dairy farmer is member of a dairy cooperative, fewer UTPs occur on that dairy farm.

Bijman et al. (2012) shows that the imbalance in market power can be reduced if dairy farmers are connected to a dairy processing cooperative. A greater imbalance in market power in the dairy supply chain potentially increases the occurrence of UTPs, therefore a farmer's membership to a cooperative should diminish the possibility to endure UTPs. Therefore, we expect that cooperative membership by dairy farmers reduces the occurrence of UTPs on dairy farms.

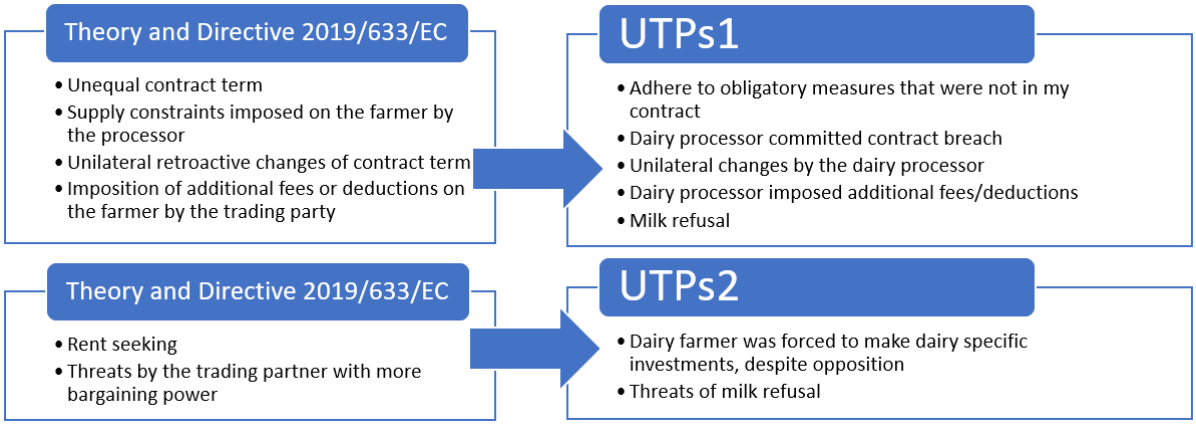
Hypothesis 6: When more hectares of a dairy farm's land is devoted to grassland, fewer UTPs occur on that dairy farm.

Due to increased attention for sustainable agricultural production processes and animal welfare, consumer demands in the Netherlands changed. There is an increasing demand of dairy products from dairy cows that have grazed on grassland (Elgersma, 2013; Klootwijk, 2019). Governmental bodies and dairy associations agreed to stimulate grazing by increasing milk prices for grazing dairy cows, which in turn is an incentive to dairy farmers to keep their dairy cows grazing (Elgersma, 2013). Linked to the bargaining position of dairy farmers from MIO, dairy farmers with the ability to adhere to consumer and industry demands have better bargaining positions and are less prone to UTPs. Therefore, we expect that when more hectare of a dairy farmer is devoted to grassland the occurrence of UTPs decreases.

4.2.2. Dependent variables

This section shows the dependent, independent and control variables used in the regression model. They are used to find a relationship between the occurrence of UTPs and several determinants of production and contract characteristics in the Dutch dairy market.

There are two dependent variables, namely UTPs1 and UTPs2 presented in figure 10. The UTPs reflect the theory explained in section 2.1. and 2.2. and the directive 2019/633/EC presented in section 2.4. and are confirmed by expert's opinions and occur in the contract execution phase most often. The main reason to focus on the contract execution phase is due to the nature of the structure and organization of the Dutch dairy market in which cooperatives dominate the market and contracts are hardly negotiable. The main reason for separating the considered UTPs is the measurability of the UTPs.



Considering the fear factor, threats are difficult to measure and have little to no evidence of existence (Renda et al., 2014; Schebesta et al., 2019). Therefore, it is interesting to know what the possible impact of threats and rent seeking can be.

Source: created by Author

The dummy variables D_UTPs1 and D_UTPs2 are created from UTPs1 and UTPs2 presented in figure 10. Table 7 presents the variables and descriptive analyses that are used in in the dummy variables. D_UTPs1 is a combination of the dummy variables D_M, D_PFC, D_CA, D_fees and D_MR. D_UTPs2 is created by combining D_TRM and D_Inv_2. D_UTPs1 and D_UTPs2 are 1 when one or multiple specific UTPs listed in figure 10 occurred on that dairy farm.

Table 7 Definition of dependent variables and descriptive analysis

Variable	Definition	Dimension	Percentage of sample (SD)
D_UTPs1	All farmers who encountered a UTP mentioned in figure 10 under UTPs1	binary (1=occurred)	0.305 (0.462)
D_UTPs2	All farmers who encountered a UTP mentioned in figure 10 under UTPs2	binary	0.188 (0.392)
D_M	All farmers who encountered obligatory measurements that were not in my contract	binary	0.097 (0.297)
D_PFC	All farmers who have encountered contract breach by their processor	binary	0.013 (0.113)
D_CA	All farmers who have encountered unilateral contract changes by the processor	binary	0.162 (0.370)
D_fees	All farmers who have faced additional fees or deductions from their income by the processor	binary	0.097 (0.297)
D_MR	All farmers whose milk was refused by their processor	binary	0.039 (0.194)
D_TRM	All farmers who have encountered threats to milk refusal	binary	0.071 (0.258)
D_Inv_2	All farmers who were forced to make dairy specific investments, despite opposition	binary	0.136 (0.344)

Source: Created by Author based on STATA output

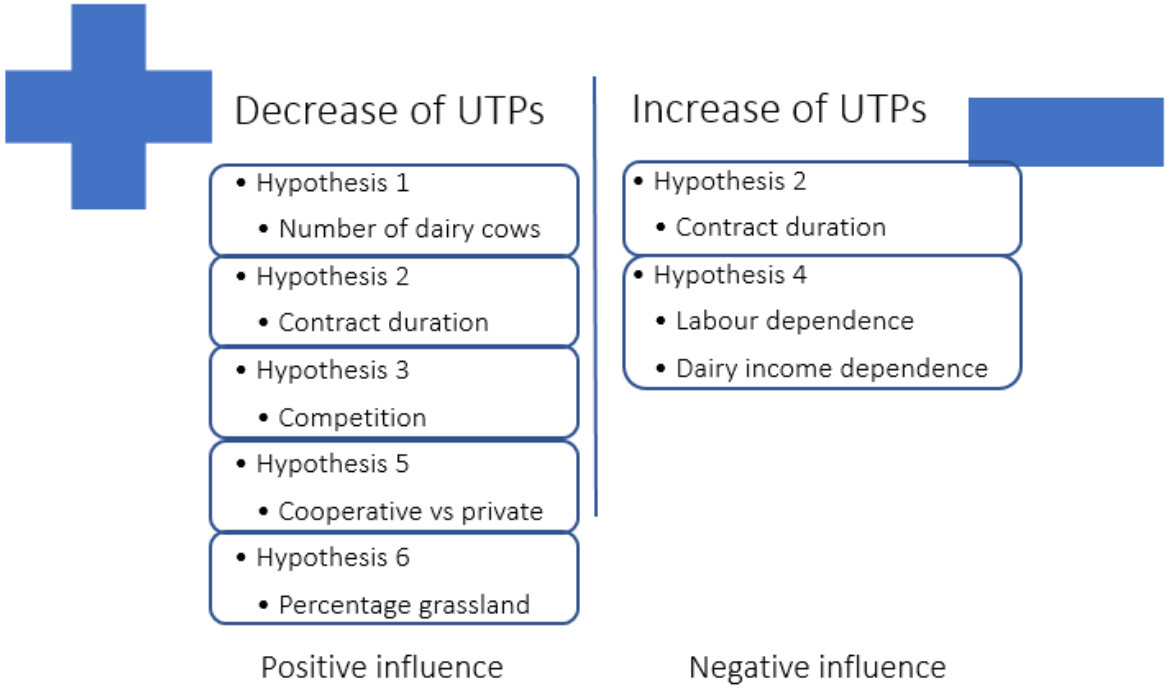
4.2.3. Independent and control variables

Table 8 Shows the independent and control variables. The independent variables have a relationship with the hypotheses presented in section 4.2.1 and are shown in figure 11. Appendix 2 presents the correlation matrix. The correlation matrix shows that number of dairy cows (No_Cows) and number of hectares (Total_HA) are significantly correlated with each other (0.858), therefore only No_Cows is a proxy for hypothesis 1. Hypothesis 2 uses the variable duration of the contract as a proxy. This variable is corrected for by age, as some respondents had longer running contracts than their respectable age. An explanation is that the contract with their dairy processor can run for multiple generations of dairy farmers. The correlation factor between age and contract duration was also very high (0.406) and therefore age was left out. Hypothesis 3 uses the variable of competition as a proxy, in which the number of different dairy processing companies per province are counted. Figure 4 shows the geographical distribution of the dairy processing plants. FC is the largest dairy processing company of the Netherlands with multiple processing plants per province. However, as it is just one company, we consider FC, despite its size, as one competing dairy processor. Hypothesis 4 has two independent variables as proxy. The correlation factor between Perc_Labour and Perc_dairy_total is not very high 0.1787. Therefore, these two independent variables can also be used alongside each other to predict

the probability of UTPs occurring. The variable Perc_labour consists out of a percentage of total labour hours spent on the dairy farm as opposed to labour hours spent elsewhere. The variable Perc_dairy_total consists out of the percentage milk income of total household income. Hypothesis 5 uses a dummy variable of the dairy processing company, which is the trading partner of the dairy farmer, being a cooperative (1) or a private dairy processor (0) as proxy. Hypothesis 6 uses a percentage calculation of total number of hectares on a dairy farm devoted to grassland production divided by the total number of hectares used on a dairy farm as a proxy.

Control variables (table 8) are added for other factors that may influence or control for the effect of the independent variables on the dependent variables. These control variables are widely used in adoption literature (Marra et al., 2003; Mareny & Barrett, 2007; Wossen et al., 2015). The controls that are used here are 'legal status of the farm', 'education' and 'gender'. Legal status of the farm is defined by a dummy variable, in which 1 represents the farm being a family farm or a 'maatschap' and 0 represents the farm being a BV or VOF. The difference between the groups is the liability, in which the former has a liability on own private property of the debtor, whereas the latter has a shared liability with the partners (van Brakel, 2015). Education is a categorical variable based on the level of education the respondent followed. The different educational levels in the Netherlands can be found in appendix 1 Gender is a dummy variable in which 1 represents being male and 0 being female.

Figure 11 Relation of independent variables with the hypotheses



Source: Created by Author

Table 8 Definitions of independent variables and descriptive analysis

Independent variables	Name of variable	Definition	Dimension	Mean (SD)	Min	Max
Number of dairy cows	No_Cows	Number of dairy cows on the farm	continuous	110 (62)	40	405
Contract duration	Dur_cont	Length of current contract in years	continuous	23.81 (13.8)	0	56
Competition	comp	Number of dairy processing plants per province (FC=1)	continuous	4.38 (2.14)	0	7
Labour dependence	Perc_Labour	Percentage labour spent on dairy farm of total labour spent	percentage	93.66 (12.97)	50	100
Dairy income dependence	Perc_dairy_total	Percentage dairy farm income of total household income	percentage	80.57 (22.72)	7	100
Cooperative vs Private	D_proc	Dummy variable. Value 1 for cooperative, 0 for private	binary	0.85 (0.36)	0	1
Percentage grassland	Perc_grass	Percentage grassland of total amount of hectares used by the dairy farmer	percentage	85.74 (16.75)	17	100
Control variables						
Legal status farm	D_fam	Dummy variable for judicial status of the farm	binary	0.79 (0.41)	0	1
Education	Educ	Education from elementary to university	continuous	3.15 (0.64)	2	6
Gender	D_Man	Dummy variable for gender. Value 1 for Men	binary	0.90 (0.31)	0	1

Source: Created by Author based on STATA output

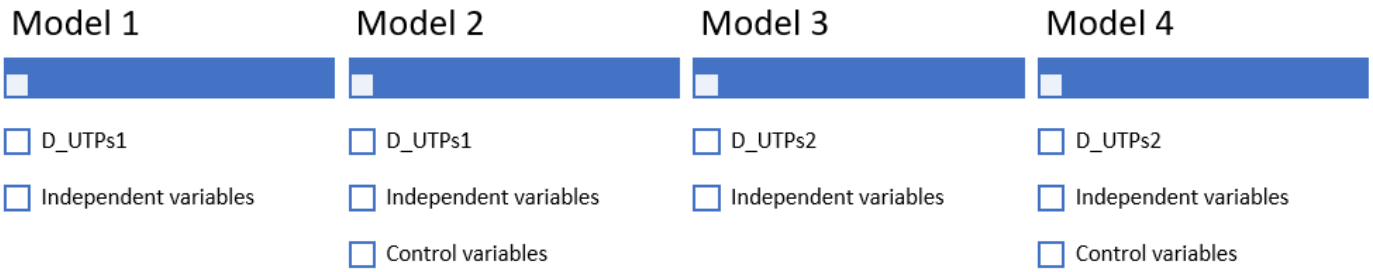
4.2.4. Probit model

The determinants of UTP occurrence on a dairy farm will be analysed using a Probit model. With this method, it can be tested whether different variables influence the probability of a UTP occurring on a dairy farm. Two dummy variables are created that represent a set of UTPs explained in section 4.2.2. The independent and control variables that will be tested to assess whether UTP occurrence is influenced by these variables is explained in section 4.2.3. A Probit model is used for a binary outcome. In this case; whether at least 1 UTP occurred on the dairy farm (1) or not (0). This method uses a maximum likelihood estimation based on a standard normal distribution. Robust standard errors are used to solve for heteroskedasticity;

$$\Pr(UTP_i) = \beta_0 + \beta_1 X_i + \beta_2 C_i + \varepsilon_i$$

Where Pr represents the probability of UTP_i being 1 or 0. UTP_i can be D_UTPs1 and D_UTPs2. β_0 is a constant, X_i is a vector of the independent variables (table 8) and C_i is a vector of the control variables (table 8). β_1 and β_2 are vectors of coefficients associated with X_i and C_i. ε_i, is the error term. Figure 12 presents four models considered based on the following equation

Figure 12 Four models considered



Source: Created by Author

5 Empirical evidence of UTP occurrence on Dutch dairy farms

This chapter presents the occurrence and determinants of UTPs in the Dutch dairy sector. First, descriptive analyses are presented on contract characteristics and the occurrence of UTPs in the Dutch dairy sector over the periods of 2014 and 2018. Second, we present the Probit regression results on the determinants of UTP occurrence presented in section 4.2.1.

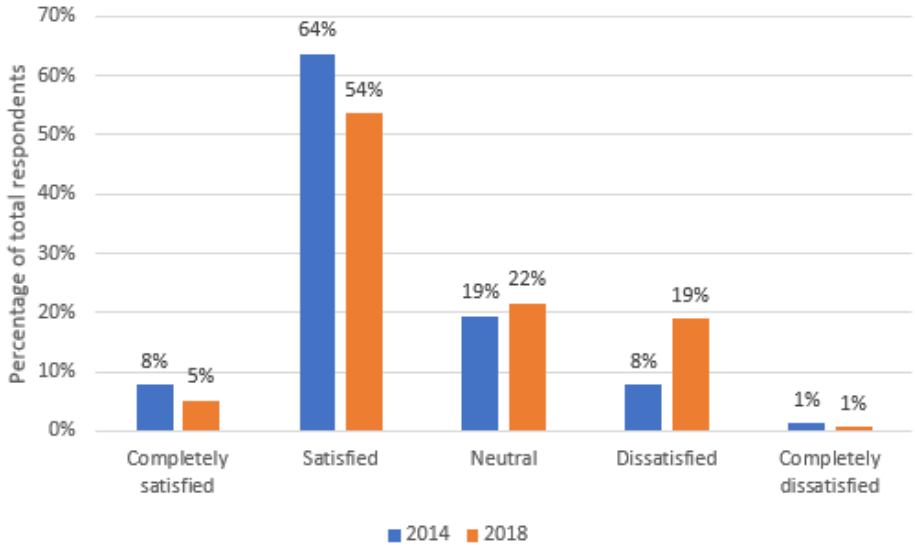
5.1 Descriptive analysis

This section presents the descriptive analyses from the questionnaire results. First, contract characteristics are presented which are used as independent variables and introduced in section 4.1.3. Second, the occurrence of several UTPs in the Dutch dairy sector are presented that relate to the dependent variables presented in section 4.2.2. The UTPs considered relate to the stages of contract development presented in section 2.3. Both sections will present results from 2014 and 2018, because the milk quota abolishment was expected to have had major implications for the structure and conduct of the Dutch dairy sector.

5.1.1 Contract characteristics

Contract characteristics are important for the relationship between the dairy farmer and processor as they influence the uncertainty of events and decisions made prior to the signing and influence the behaviour and power relation after the contract is signed. The survey shows that in 2018 most farmers had a written contract with a dairy cooperative (85%) and only few had a contract with a privately owned dairy processing plant (15%). Figure 13 shows that the satisfaction level of farmers in the relation with their dairy processor in 2018 is lower than in 2014. The number of farmers that are dissatisfied with the relation with their dairy processor increased from 14 to 30 since 2014. The number of farmers that are still satisfied with their relationship with their dairy processor decreased from 110 to 90 since 2014.

Figure 13 Satisfaction level with dairy processor



Source: Created by Author based on questionnaire results (N=154)

Differences in contract duration are relatively significant as they range from 0 to 56 years with an average of 23 years. 97% of dairy farmers said that their contract was not negotiable. An explanation, given in section 4.1.3, is amplified by 77% of the respondents arguing that their negotiation position

remained the same since 2014. However 17% of the respondents argued that their negotiation position decreased. 65% of the respondents who argued that their negotiation position decreased explained that there are too many demands from the dairy processing side. Only 6% argued that their negotiation position increased since 2014. Contract cancellation is relatively easy according to the respondents, 81% of the surveyed respondents said it is easy to cancel the contract and 9 dairy farmers switched dairy processor since 2014. However, dairy farmers were not very much aware of their contract terms. 62% of the respondents didn't know their cancelation period of the contract and 83% of the respondents did not know/answer whether the contract contained equal cancellation terms.

5.1.2 Occurrence of UTPs in the Dutch dairy sector

This section presents the occurrence of several UTPs in the Dutch dairy sector in the contractual content, during contract execution and finalization.

Two UTPs in the contractual content were considered for the Dutch dairy market. The first one regards a protection mechanism being in place for the dairy farmer if the buyer fails to fulfil the contract. 80% of the survey respondents said that no protection mechanism is in place if the main dairy buyer fails to fulfil the contract, and 20% said there was such a mechanism in place (N=149). The second UTP regards the imposition of dairy-specific investments by the dairy purchaser. Table 9 shows the share of dairy farmers that were forced to make dairy-specific investments and whether they would have made these investments also without imposition by the milk buyer. A distinction is made between the willingness and opposition to make a dairy-specific investment, because the latter can be seen as a threat to make a dairy-specific investment. Therefore, this UTP is added to the dependent variable UTPs2.

Table 9 Cross tabulation of dairy-specific investments and the obligation

Number of respondents (percentage of total number of respondents)	Would make dairy-specific investments anyhow	Would not make dairy-specific investments if not forced	Total
Obligation to make dairy-specific investments	(21%)	(14%)	(35%)
No obligation to make dairy-specific investments	(32%)	(33%)	(65%)
Total	(53%)	(47%)	100%

Source: created by Author from questionnaire results. N=151.

Table 10 presents the UTPs during contract execution. There is a general increase in the occurrence of UTPs (37 in 2014 to 57 in 2018) in the Dutch dairy sector, not taking (Threats of) Milk refusal into account[5]. All UTPs from table 10 except threats to milk refusal are related to quality or quantity settlements and have been taken up in the dependent variable UTPs1. The UTPs of threats to milk refusal and obligations to make dairy specific investments, despite opposition (table 9) have been taken up in the dependent variable UTPs2. All UTPs reported in table 10 are related to Directive 2019/633/EC presented in section 2.4. either directly or indirectly.

After contract finalization the UTP 'contract was terminated unilaterally by the dairy processor before expiration' was considered. 139 contracts were still running in 2018, and from 11 contracts that were

[5] Milk refusal and threats to milk refusal were not documented for 2014, only for 2018.

terminated, 4 (3%) were ended by the dairy farmer and only 2 (1,5%) were ended by the dairy processor. 5 contracts were terminated with mutual consultation, which is not considered a UTP.

Table 10 Occurrence of UTPs in the Dutch dairy sector in 2018 and 2014

UTP	Total 2018	percentage	Total 2014	percentage
Adhere to obligatory measures that were not in my contract	15	9.7%	9	5.8%
Dairy processor did not fulfil the contract	2	1.3%	2	1.3%
Dairy farmer did not fulfil the contract	0	0%	2	1.3%
Unilateral contract changes by the dairy processor	25	16.2%	15	9.7%
Dairy processor imposed additional fees/deductions	15	9.7%	9	5.8%
Threats of milk refusal	11	7%	-	-
Milk refusal	6	3,9%	-	-

Source: created by Author from questionnaire results. N=154

5.2. Probit estimations of UTP occurrence

This section presents the regression results on the determinants of UTP occurrence. First, the Goodness-of-fit statistics are presented to assess the quality and to determine the best model for both dependent variables presented in section 4.2.2. Second, the probit estimations based on the dependent, independent and control variables are presented. This section presents the independent variables that influence the probability of UTP occurrence on Dutch dairy farms. The results of the two best models from the dependent variables are presented through the hypotheses from section 4.2.1. The original STATA output can be found in appendix 3.

5.2.1. Goodness-of-fit statistics

For all four model's, goodness-of-fit statistics are presented in table 11 to assess the quality of the model. First, McFadden's R^2, Tjur's D, and Akaike´s information Criteria (AIC) and Bayesian Information Criteria (BIC) are presented to assess the quality of the models. Second, the models that predict best are presented.

McFadden's R^2 compares the log-likelihood of the final model with the log-likelihood with only the constant in it (Dougherty, 2016). It does not have a natural interpretation, but values between 0.2 and 0.4 indicate that the model has a good fit (Lee, 2013). Model 2 and 4, with control variables, both predict the occurrence of UTPs on a Dutch dairy farm better than model 1 and 3 without control variables. But this is most likely because more variables are added. However, model 4 (0.078) does not fit in the bandwidth of 0.2 and 0.4, whereas model 2 (0.260) does fit. This suggests that important variables are missing. Although the lack of UTPs in model 3 and 4 can also account for that.

Another goodness-of-fit statistic, which is gaining popularity, is Tjur's D (Williams, 2018). Tjur's D can only be used when there is a binary dependent variable. It takes for each category of the dependent variable (1 or 0) the (absolute) difference between the two calculated means of the predicted probabilities of the event. The advantage is that Tjur's D not always increases when independent and control variables are added to the model. Although it doesn't have a natural interpretation either,

literature argues that it is closely related to R^2 definitions (Williams, 2018). Model 2 and 4, with control variables, both predict the occurrence of UTPs on a Dutch dairy farm better than model 1 and 3 without control variables. Model 3 and 4 have lower predicted probabilities than model 1 and 2, an explanation is that one of the dependent variable categories (1 or 0) is close to 1 or 0 (Dougherty, 2016). Table 7 shows that the occurrence of UTPs2 (0.188) is not high enough to consider these models a good fit.

The last goodness-of-fit statistics that are presented are the AIC and the BIC. This statistic is used to assess the quality of extra variables in the model. The model with the lowest statistics is preferred. This is because the BIC and AIC penalize for excessive variables (Verbeek, 2017; Williams, 2018). Table 11 shows that AIC prefers model 2 over model 1. However, the BIC prefers model 1. An explanation is that the control variables do not adjust for the effect of the independent variables on the dependent variables well enough and the BIC penalizes stricter than AIC. Model 3 is preferred over model 4, as both the statistics provide evidence that adding control variables to the model do not increase the fit of the model.

Table 11 Goodness-of-fit statistics of the four estimated Probit models

	Model 1	Model 2	Model 3	Model 4
McFaddens R2	0.209	0.260	0.069	0.078
Tjurs D	0.233	0.289	0.066	0.080
AIC	124.577	123.468	111.654	116.670
BIC	146.466	153.566	133.544	146.769

Source: created by Author based on STATA output.

In conclusion, model 2 is preferred over model 1. Despite the BIC showing evidence that the control variables do not increase the fit of the model, the other three statistics do indicate that adding control variables to the model increases the fit to predict the probability of UTPs1 occurring on Dutch dairy farms. Model 3 is preferred over model 4 as the BIC and AIC indicate that adding control variables to the model does not increase the fit to predict the probability of UTPs2 occurring on Dutch dairy farms.

5.2.2. Independent variables

This section presents the effect of the determinants on the occurrence of UTPs1 and UTPs2 in the Dutch dairy sector. The probit estimation results can be found in table 12. The data from model 2 and model 3 that have a significant impact on UTP occurrence are presented below.

H1: The larger the size of the dairy farm, the fewer UTPs occur on that dairy farm

The number of dairy cows on the farm, i.e. the size of the farm, has no significant effect on the occurrence of UTPs1 and UTPs2. Therefore, we can say that there is no relation between the size of the farm and the occurrence of UTPs. This is contradictive to the findings of Falkowski et al. (2017) and Gorton et al. (2017), in which they argued that SMEs are more vulnerable to UTPs than larger farms.

H2: The longer a contract runs between a dairy farmer and the dairy processor, the fewer UTPs occur on that dairy farm.

The length of the contract does not influence the occurrence of UTPs in both models. There is no relation between contract duration and the occurrence of UTPs in the Netherlands. This is also contradictive to the findings of Falkowski et al. (2017) and Di Marcantonio et al. (2018b).

Hypothesis 3: The higher the number of competing dairy processors are active in the region of the dairy farmer, the fewer UTPs occur on that dairy farm.

There is no relation found between the occurrence of UTPs and the amount of dairy processing plants in the dairy farmers province for both models. This means that geographical distribution of dairy processing plants has no influence on the UTP occurrence. This can be explained in three ways. First, the dominant position from FC, as presented in figure 4, obstruct having competition in the oligopsonistic market structure and dictates the Dutch dairy market. Second, thanks to technology advances, milk collecting trucks (TLN, 2019) increased their action radius over the years which can take down the provincial barriers of competition. Third, as many dairy processing plants are located on the provincial border, no such thing exist in the Dutch dairy market.

Hypothesis 4: The more dependent a dairy farmer is on their dairy business, the more UTPs occur on that dairy farm.

Dairy farm dependency is measured through Labour dependence and Dairy income dependence. Model 2 shows that Labour dependence (0.014) and Dairy income dependence (0.004) increases the probability of UTP occurrence for model 2. Meaning that when a dairy farmer spends one more labour hour on their farm instead of elsewhere the probability that a UTP from UTPs1 occurs on their farm increases with 1.4%. And when a dairy farmer sees their income from dairy farming increasing with 1% as opposed to other sources of income, then the probability that a UTP from UTPs1 occurs on their farm increases with 0.4%. Model 3 has no relation with the independent variables. Following the theory, it was expected that Labour dependence and Dairy income dependence would relate more to an imbalance in market power, instead of threats or rent-seeking.

Hypothesis 5: When a dairy farmer is member of a dairy cooperative, fewer UTPs occur on that dairy farm.

There is no relation between the occurrence of UTPs and the membership to a cooperative (1) or a trade relation with a private dairy processing company (0), despite the expectations that cooperative membership decreases the occurrence of UTPs. An explanation is that many dairy farmers are dissatisfied with the relationship between the dairy processing companies and the dairy farmers as figure 13 suggests.

Hypothesis 6: When more hectares of a dairy farm's land is devoted to grassland, fewer UTPs occur on that dairy farm.

Both model 2 and 3 show a relation between the percentage grassland of total hectare in use and the occurrence of UTPs. However, the relations are contradictive. Model 2 shows a small negative effect (-0.009), meaning that more hectares devoted to grassland decreases the occurrence of UTPs1. This is in line with theory presented that consumer demand does influence favouring grassland over other agricultural land use. On the other hand, model 3 shows a small positive effect (0.005), meaning that more hectares devoted to grassland increases the occurrence of UTPs2. An explanation can be that dairy farmers are, despite consumer demand, economically driven to grassland production. Whether this is by threats, fear or rent-seeking is unclear.

5.2.3. Control variables

Model 2 shows that control variables do correct for other factors besides the effect the independent variables have on UTPs1. As discussed in section 5.2.1. adding control variables for the dependent variable UTPs2 does not increase the fit of the model. This can be seen in table 12 where the control variables in model 4 have no significant influences on the probability of UTPs2 occurrence.

Model 2 shows that the legal status of the farm and gender have a significant effect on the probability of UTPs1 occurrence. The legal status of the farm has a negative effect on the probability of UTPs1 occurrence. When a dairy farm's legal status is a family farm or a 'maatschap', the probability of a UTP occurring on that dairy farm is 30% less than when a dairy farm's legal status is a VOF or BV.

Gender has a positive influence on the probability of UTPs1 occurrence. When the head of the dairy farm is male, then the probability of a UTP occurring on that dairy farm is 17% less than when the head of the dairy farm is female.

Table 12 shows that the control variables do not correct for other factors besides the effect independent variables have on UTPs2. Therefore ,we can conclude that the right choice of model selection is made as adding control variables to the model does not increase the fit to predict the probability of UTPs2 occurring on Dutch dairy farms.

Table 12 Probit estimations of the four models

	Model 1	Model 2	Model 3	Model 4
Independent variables				
Number of cows	-0.001	-0.001	0.001	0.001
Contract duration	-0.001	-0.002	-0.001	-0.002
Competition	0.011	0.030	0.015	0.015
Labour dependence	0.014***	0.016***	0.002	0.002
Dairy income dependence	0.004*	0.004**	0.001	0.001
Cooperative vs private	-0.136	-0.101	-0.027	-0.027
Percentage grassland	-0.009***	-0.008***	0.005*	0.004*
Control variables				
Legal status farm	-	-0.306**	-	-0.030
Education	-	0.028	-	0.037
Gender	-	0.174**	-	0.069

Note: *(10%); **(5%); ***)1%), indicate the level of significance. Source: Created by Author based on STATA output.

6. Conclusion

This research was conducted in order to examine the existence of UTPs in the dairy sector in the Netherlands. This chapter answers four sub-research questions regarding the theoretical reasons for UTP existence, the structure and organization of the Dutch dairy market and the occurrence and the determinants of UTPs. Concluding, the Main Research Question 'What is the existence of UTPs in the dairy sector in the Netherlands' is answered. This empirical research is an extension of the study by Di Marcantonio et al. (2018a) on UTPs in the dairy farm sector in several EU countries.

First, when looking at the theoretical reasons for UTP existence, an imbalance of market/bargaining power and a hold-up problem arise. Underlying to these reasons are the theories on MIO and TCE. MIO explains that an imbalance of market/bargaining power is underlying to the occurrence of UTPs. Forms of UTPs from MIO are (imposed) unequal contract terms, supply constraints imposed on the farmer by the processor, unilateral retroactive changes of contract terms or threat of retaliation. TCE, as one part of Incomplete Contract Theory, focuses on uncertainty during the contractual execution phase. This uncertainty leaves room for opportunistic behaviour and introduces a hold-up problem. Causes of a hold-up problem are asset specificity, behavioural uncertainty and frequency of exchange. Forms of UTPs from TCE are rent seeking or imposition of additional fees or deductions on the farmer's income by the trading party. The UTPs from directive 2019/633/EC are predominantly used as guidelines for the UTPs to be analysed for the Dutch dairy sector and relate to MIO and TCE. These UTPs are adjusted by the findings on UTP occurrence from the empirical literature.

Second, an analysis of the Dutch dairy market is used to gather insights on the structure and organisation of the Dutch dairy market and to create a sample design. The analysis is used to structure and design the questionnaire and to make it country-specific. Intensification and upscaling have been the trend in recent decades as the number of dairy farms declined with 39% between 2000 and 2017. Rural provinces in the Netherlands hold the most dairy farms. The dairy processing side in the Netherlands is dominated by cooperatives (86% of market share) with FC being the largest (70% of market share). In comparison to other countries in Europe, the Netherlands have on average larger dairy farms and higher milk yields per dairy cow.

Third, the occurrence of UTPs in the Dutch dairy sector are presented. In general, there is an increase in UTPs (37 in 2014 to 57 in 2018) from UTPs1. From UTPs2 14% of the respondents encountered the obligation to make dairy-specific investments, despite opposition. 7% of the survey respondents encountered a threat to milk refusal by their dairy processor. This is significantly lower than CIAA-AIM (2011), CNC (2011) and COPA COGECA (2013) who found that in total 77%, 65% and 51% of their studies respondents encountered threats to the business operations respectively. In total 31% of the survey respondents encountered at least one UTP from UTPs1 and 19% of the survey respondents encountered at least one UTP from UTPs2. This exceeds the findings by Di Marcantonio et al. (2018a). They found that 8.6% of the survey respondents (and 17.6% in Galicia) encountered at least one UTP from the contract execution phase including the fear factor. However, CIAA AIM (2011) found that 96% of companies were exposed to UTPs and COPA COGECA (2013) found that 94% of all farms were occasionally exposed to UTPs, which is higher than the findings of the study, but more UTPs are considered in both studies. An explanation is that the Dutch dairy market is highly intensified and concentrated. As MIO explains, fewer trading parties increases the chance of UTP occurrence. As TCE explains, asset specificity increases the chance to a hold-up, thus increasing the possibility of UTP occurrence.

One UTP from the contractual content is considered, because contracts are not negotiable in the Netherlands. 80% of the survey respondents said that no protection mechanism was in place if the main

dairy buyer fails to uphold the contract. This is much lower than the average found by Di Marcantonio et al. (2018a). An explanation is the market share of cooperatives. As opposed to the studied countries, the market share of cooperatives in the Netherlands (86%) is much higher (France and Germany 50-75%, Spain and Poland 25-50%) (Bijman et al., 2012).

Fourth, the determinants of UTPs are identified and the impact of the determinants on the probability of UTP occurrence is estimated. Model 2 and 3 (figure 12) are preferred as they have a better fit. The outcomes of the preferred probit models (2 and 3) differ substantially. Labour dependence (0.014), Dairy income dependence (0.004) and Percentage grassland (-0.009) all have an impact on the probability of UTP occurrence from UTPs1. Only Percentage grassland (0.005) has an impact on the probability of UTP occurrence from UTPs2. The control variables Legal status farm (-0.306) and Gender (0.174) have an impact on the probability of UTP occurrence from UTPs1 and therefore do correct for other factors besides the effect of the independent variables on UTPs1. The control variables did not correct for other factors besides the effect of the independent variables on UTPs2. That was expected as the goodness-of-fit statistics did not indicate that the control variables increased the fit. The impact of Percentage grassland is contradictive in both models as it reduces the probability of UTP occurrence in the former model and increases the probability of UTP occurrence in the latter model. An explanation can be that dairy farmers are, despite consumer demand, economically driven to grassland production. Whether this is by threats, fear or rent-seeking is unclear.

Compared to Di Marcantonio et al. (2018b) this study did not find similar results. Di Marcantonio et al. (2018b) found that, among other determinants not used in this study, Legal status of the farm; Having a membership to a cooperative; Long relationship have a positive impact on the UTP occurrence on dairy farms. This means that when the farm is a family farm, member to a cooperative and the contract duration increases the number of UTPs decreases. This study only found a relationship on the Legal status of the farm, but it was considered a control variable in this model. The numbers of UTPs considered in the model also influence the determinant outcomes, as Di Marcantonio et al. (2018b) found fewer significant results when the number of UTPs in the dependent variable are lower. This study found the same result as model 2 has more significant determinants impact the probability of UTP occurrence than model 3.

In conclusion, the existence of UTPs in the dairy sector in the Netherlands is relatively high compared to other EU countries analysed by Di Marcantonio et al. (2018a, b). This can be explained by the intensification and concentration in the Dutch dairy sector the past few decades. This means that dairy farmers become more dependable both on income, trade partners and other business activities, thus increasing the chance of UTPs through an imbalance of market/bargaining power and hold-up problems. UTPs that occurred most are Unilateral contract changes by the dairy processor, the imposition of additional fees or deductions on the farmer's income by the trading party and adherence to obligatory measures not listed in the contract. The first two are mentioned in Directive 2019/633/EC. However, the determinants that explain the effect on UTP occurrence are not statistically sound as the number of respondents is not high enough and the results are not generalizable for the Dutch dairy sector because of the small and skewed sample. Nevertheless, this thesis contributes to the empirical literature on UTPs as it indicates and explains the existence of UTPs in the dairy sector in the Netherlands.

7. Discussion

This research is in line with the research conducted by Di Marcantonio et al. (2018a, b). Even though the results on occurrence of UTPs differ from Di Marcantonio et al. (2018a, b), the findings of different UTPs suggest that the problem is broader than the Dutch case. However, there are three caveats, or choices made, that potentially interfere with the thesis outcome and credibility. These are the choice of UTPs, the concentration of the Dutch dairy market and the methodology on data collection and sampling.

The first caveat regards the UTPs chosen in this research. The UTPs chosen to examine in this thesis (figure 10) only represent a small part of the UTPs found in the growing body of scientific literature (Perekhozhuk et al., 2016) and refer to multiple stages of contract development (COPA COGECA, 2018; Di Marcantonio et al., 2018). As time and resources were limited, the UTPs focused on refer to Directive 2019/633/EC. It presents UTPs that were broadly recognized to influence a farmers' business operation negatively (EC, 2018c). The downside of using Directive 2019/633/EC is that they might not be sector or country specific, meaning that these practices do not apply for the dairy sector or are already institutionalized, as with the Dutch bill of late payments (art.119a of het burgerlijk wetboek boek 6, 2017). This means that the UTPs considered occur less frequently in the Dutch dairy sector. Moreover, this study lacks UTPs that are not yet described in scientific literature and therefore cannot be analysed. Examples are programmes supporting sustainable dairy farming (SER, 2016; WUR, 2019). This may jeopardize the outcome of the study.

The second caveat regards the structure of the Dutch dairy market. This thesis deliberately focused on the contract execution stage because the structure of the Dutch dairy market is moreover cooperatively organised, with limited room for negotiations over contractual content (Bijman & Hanisch, 2012). However, findings on change in negotiation power in section 5.1.1. suggest that the cooperatives do not function any longer as described by Bijman & Hanisch (2012) and are distrusted by their members/suppliers. This is in line with the relationship marketing theory by Morgan and Hunt (1994) in which trust influences the relationship commitment between supplier and trading partner, in this case the dairy processing company. Sexton (2017) and Gorton et al. (2017) introduced the relationship marketing theory as third methodological framework to analyse the occurrence of UTPs besides Asymmetric deterrence theory (in this thesis referred to the imbalance of marketing/bargaining power) and transactions-cost economics. The relationship marketing theory is not used as third theoretical framework because it has to much overlap with transactions-cost economics and power theories.

The third caveat regards the methodology on data collection and sampling. This could be improved in three ways. First, phone call interviews, as opposed to face-to-face interviews are more likely to suffer from miscommunications as the respondents can only hear the questions, instead of reading them and arguing about the answer. Second, as (dairy) farmers are often in a rush, limited time is created to answer the questionnaire. Third, there can be an issue of non-compliance bias as (dairy) farmers could decline participation more easily. The sampling method and sample representativeness can also influence the study outcome. The external validity is not very high as the results of this thesis cannot be generalized. The population group of dairy farmers with less than 50 dairy cows (with an average of 35 dairy cows) was left out of the sample population. This group still represents 21% of the dairy farmers population, despite declining fast. Falkowski et al. (2017) and Gorton et al. (2017) argued that smaller (dairy) farmers more often encounter UTPs than larger (dairy) farmers. Therefore, the outcomes have to be interpreted with caution. The outcome of Hypothesis 1 amplifies the questionability of the outcomes as no relation has been found between UTP occurrence and farm size, considering the smallest group has been left out. Further research can focus on other UTPs outside the scope of Directive 2019/633/EC and account for all dairy farmers

References

Agricultural Markets Task Force. (2016). *Improving Market Outcomes; Enhancing the Position of Farmers in the Supply Chain*. Retrieved from https://ec.europa.eu/agriculture/sites/agriculture/files/agri-markets-task-force/improving-markets-outcomes_en.pdf

Assefa, T. T., Kuiper, W. E., & Meuwissen, 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. https://doi.org/10.1002/agr

Assefa, T. T., Meuwissen, M., & Oude Lansink, A. (2015). Price Volatility Transmission in Food Supply Chains: A literature Review. *Agribusiness*, *31*(1), 3–13. https://doi.org/10.1002/agr

Azzam, A. (1997). Measuring Market Power and Cost-Efficiency Effects of Industrial Concentration. *The Journal of Industrial Economics*, *45*(4), 377–386.

Baltussen, W., Drabik, D., Dries, L., Galen van, M., Gardebroek, C., Ihle, R., … Oosterkamp, E. (2019). *Monitoring of Prices and Margins in EU Food Supply Chains*. https://doi.org/10.2760/197814

Basic. (2015). *Banana value chains in Europe and the consequences of Unfair Trading Practices*. Retrieved from http://www.bananalink.org.uk/banana-value-chains-europe-and-consequences-unfair-trading-practices

Bhattacharya, A., Singh, P. J., & Nand, A. A. (2015). Antecedents of buyer opportunistic behavior in outsourcing relationships. *International Journal of Production Economics*, *166*, 258–268. https://doi.org/10.1016/j.ijpe.2015.03.011

Bijman, J., & Hanisch, M. (2012). *Support for Farmers ' Cooperatives Developing a typology of cooperatives and producer organizations in the EU*. Wageningen.

Bijman, J., Iliopoulos, C., Poppe, K. J., Gijselinkckx, C., Hagedorn, K., Hanisch, M., … van der Sangen, G. (2012). *Support for Farmers ' Cooperatives*.

Bijman, J., van der Sangen, G., Poppe, K. J., & Doorneweert, B. (2012). *Support for Farmers ' Cooperatives Country Report The Netherlands*. Wageningen.

Bonanno, A., Russo, C., & Menapace, L. (2018). *Market power and bargaining in agrifood markets : A review of emerging topics and tools*. (November 2017), 6–23. https://doi.org/10.1002/agr.21542

Bunte, F., Bolhuis, J., de Bont, C., Jukema, G., & Kuiper, E. (2009). *Prijsvorming van voedingsproducten*. Den Haag.

Butler, P., & Herbert, C. (2014). *Access to Justice vs Access to Justice for Small and Medium-Sized Enterprises: The case for a bilateral arbitration treaty*. *2014*(March 2013).

Cafaggi, F., & Iamiceli, P. (2017). *Monitoring UTPs for supporting better regulations: what is the information we need? What information do we miss*.

Carlton, D. W., & Perloff, J. M. (2004). *Modern Industrial Organization (4th Edition)*. Retrieved from http://www.amazon.com/Modern-Industrial-Organization-4th-Edition/dp/0321180232

CBS. (2019). Bedrijfshoofden/bedrijfsleiders per leeftijdklasse. Retrieved August 18, 2019, from https://www.cbs.nl/nl-nl/maatwerk/2019/11/bedrijfshoofden-bedrijfsleiders-per-leeftijdsklasse

CIAA-AIM. (2011). *Unfair Commercial Practices in Europe*.

Comision Nacional de la Competencia. (2011). *Report on the relations between manufacturers and retailers in the food sector*.

Commission, E. (2013). *Europe, Green Paper on Unfair Trading Practices in the B2B Food and Non-Food Supply Chain in*. 1–22.

Copa Cogeca. (2013). *Impact of unfair trading practices in the European agri-food sector.*

COPA COGECA. (2018). *THE AGRI FOOD SUPPLY CHAIN AND THE UNFAIR TRADING*. Brussels.

Crespi, J., Saitone, T. L., & Sexton, R. J. (2012). Competition in U.S. Farm Product Markets: Do Long-Run Incentives Trump Short-Run Market Power? *Applied Economic Perspectives and Policy*, *34*(4), 669–695.

Davis, P., & Reilly, A. (2010). Market power, market outcomes, and remedies in the UK groceries market. *International Association of Agricultural Economists*.

DG Agri. (2018). *EU Dairy Farms Report*.

DG AGRI. (2019a). EU Milk Market Observatory. Retrieved August 18, 2019, from https://ec.europa.eu/agriculture/market-observatory/milk_nl

DG AGRI. (2019b). Short-term outlook for EU agricultural markets. Retrieved August 15, 2019, from European Commission website: https://ec.europa.eu/agriculture/markets-and-prices/short-term-outlook_en

Di Falco, S., & Bulte, E. (2013). The Impact of Kinship Networks on the Adoption of Risk-Mitigating Strategies in Ethiopia. *World Development2*, *43*(C), 100–110.

Dougherty, C. (2016). *Introduction to Econometrics* (5th Editio). Oxford University Press.

Dries, L., & 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. https://doi.org/10.1016/j.worlddev.2004.05.004

Elgersma, A. (2013). *Dutch dairies reward grazing*.

European Commission. (2014). *Tackling Unfair Trading Practices in the Business-to-Business food supply chain*. Strasbourg.

European Commission. (2018a). Agreement on unfair trading practices in the food supply chain will protect all EU farmers. Retrieved February 27, 2019, from press release website: http://europa.eu/rapid/press-release_IP-18-6790_en.htm

European Commission. (2018b). *Impact assessement on the initiative to improve the food supply chain (unfair trading practices)*.

European Commission. (2018c). *Impact assessment Initiative to improve the food supply chain (unfair trading practices)*.

European Commission. (2018d). The “Milk Package.” Retrieved March 29, 2019, from https://ec.europa.eu/agriculture/milk/milk-package_en

European Parliament, & Council of the European Union. *Regulation (EU) No 1308/2013*. , (2013).

European Parliament, & Council of the European Union. *DIRECTIVE (EU) 2019/633 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 April 2019 on unfair trading practices in business-to-business relationships in the agricultural and food supply chain*. , (2019).

Falkowski, J., & 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. In *Joint Research Centre Technical Reports*. https://doi.org/10.2791/21346

Fałkowski, J., Ménard, C., Sexton, R. J., Swinnen, J., & Vandevelde, S. (2017). *Unfair trading practices in the food supply chain A literature review on methodologies, impacts and regulatory aspects* (F. Marcantonio, P. Ciaian, & Di, Eds.). https://doi.org/10.2760/800

Fischer, C., Hartmann, M., Reynolds, N., Leat, P., Revoredo-Giha, C., Henchion, M., … Gracia, A. (2010). *Factors influencing contractual choice and sustainable relationships in European agri-food supply chains*. *36*(4), 541–569. https://doi.org/10.1093/erae/jbp041

Fortuna, G. (2019). Battle over unfair trade practices ends, its champion rejoices. Retrieved from EurActiv website: https://www.euractiv.com/section/agriculture-food/news/battle-over-unfair-trade-practices-ends-its-champion-rejoices/

Gorton, M., Lemke, F., & Alfarsi, F. (2017). *Methodological framework: review of approaches applied in the literature to analyse the occurrence and impact of UTPs*.

Gow, H. R., & Swinnen, J. F. M. (1998). Up- and Downstream Restructuring, Foreign Direct Investment, and Hold-up Problems in Agricultural Transition. *European Review of Agricultural Economics*.

Gow, H., & Swinnen, J. (2000). Impact of foreign direct investment on agriculture and agro-industry in transition economies. In C. Csaki & Z. Lerman (Eds.), *Structural change in the farming sectors in Central and Eastern Europe* (pp. 66–78). Washintong DC: World Bank Publications; Washington DC.

Granja, C. R., & Wollni, M. (2019). *Opportunistic Behaviour and Trust : Experimental Results from Broccoli Farmers in Ecuador*. *70*(1), 62–80. https://doi.org/10.1111/1477-9552.12271

Hudson, D. (2007). *Agricultural markets and prices*. Blackwell Publishing.

Ihle, R., Dries, L., Jongeneel, R., Venus, T., & Wesseler, J. (2017). *Research for AGRI Committee The EU Cattle Sector: Challenges and Opportunities - Milk and Meat*. Brussels.

Käkhönen, A.-K. (2014). The Influence of Power Position on the Depth of Collaboration. *Supply Chain Management: An International Journal*, 17–30. https://doi.org/10.1108/SCM-03-2013-0079

Katchova, A. L. (2013). Agricultural Contracting and Agrifood Competition. In *The Ethics and Economics of Agrifood Competition* (20th ed.). Springer, Dordrecht.

Kirkwood, J. (2005). Buyer Power and Exclusionary Conducht: Should Brooke Group set the Standards for Buyer-Induced Price Discrimination and Predatory Bidding? *Antitrust Law Journal*, *72*(2), 625–668. Retrieved from https://www.jstor.org/stable/40843637?seq=1#page_scan_tab_contents

Klein, B., Crawford, R., & Alchian, A. (1978). Vertical integration, appropriable rents, and the competitive contracting process. *Journal of Law and Economics*, *21*(2), 297–326. https://doi.org/10.1017/CBO9780511817410.010

Klootwijk, C. (2019). *Keys to sustainable grazing; Economic and environmental consequences of grazing strategies for dairy farms*. Wageningen UR.

Lee, D. (2013). A Comparison of Choice-based Landscape Preference Models between British and Korean Visitors to National Parks. *Life Science Journal*, *10*(2), 2028–2036.

Liere, van J. (2016). Klachtenbureau eerlijke handel niet nodig. Retrieved from Nieuwe Oogst website: https://www.nieuweoogst.nu/nieuws/2016/04/07/klachtenbureau-eerlijke-handel-niet-nodig

Lindgreen, A., Palmer, R., & Trienekens, J. (2004). *Rrelationships within the supply chain; a case study*.

LTO. (2016). LTO: proef gedragscode eerlijke handelspraktijken levert te weinig op. Retrieved from http://lto.nl/zoeken/10869993/LTO-proef-gedragscode-eerlijke-handelspraktijken-levert-te-weinig-op

MacDonald, J. M., & Key, N. (2012). Market Power in Poultry Production Contracting? Evidence from a Farm Survey. *Journal of Agricultural and Applied Economics*, *44*(4), 477–490. https://doi.org/10.1017/s1074070800024056

Malak-rawlikowska, A., Milczarek-andrzejewska, D., & Falkowski, J. (2019). Farmers ' Bargaining Power and Input Prices : What can we learn from Self Reported Assessments? *Social Sciences*, *8*(2), 13. https://doi.org/10.3390/socsci8020063

Marcantonio, F Di, Ciaian, P., & Castellanos, V. (2018). *Unfair trading practices in the dairy farm sector : Insights from an EU field survey*. 20. Joint Research Centre European Commission.

Marcantonio, Federica Di, Ciaian, P., & Castellanos, V. (2018). *Unfair trading practices in the dairy farm sector : Evidence from selected EU regions*. https://doi.org/10.2760/747043

Marcantonio, Federica Di, Ciaian, P., & Falkowski, J. (2018). *The relationship between contractual arrangements and unfair trading practices in the EU dairy farm sector*.

Mareny, P., & Barrett, C. (2007). Household-level determinants of adoption of improved natural resources management practices among smallholder farmers in western Kenya. *Food Policy*, *32*(4), 515–536.

Marra, M., Pannel, D., & Ghadim, A. A. (2003). The economics of risk, uncertainty and learning in the adoption of new agricultural technologies: where are we on the learning curve. *Agricultural Systems*, *75*(2–3), 215–234.

McCluskey, J. J., & Rourke, A. D. O. (2000). Relationships Between Produce Supply Firms and Retailers in the New Food Supply Chain. *Journal of Food Distribution Research*, 10.

McCorriston, S. (2002). Why Should Imperfect Competition Matter to Agricultural Economists. *European Review of Agricultural Economics*, *29*(3), 349–371. Retrieved from https://www.researchgate.net/publication/5212161_Why_Should_Imperfect_Competition_Matter_to_Agricultural_Economists

Milgrom, P., & Roberts, J. (1992). *Economics, organization, and management*.

Ministerie van Veiligheid en Justitie. *Wet van 18 april 2017 tot wijziging van Boek 6 van het Burgerlijk Wetboek in verband met het tegengaan van onredelijk lange betaaltermijnen*. , (2017).

Morgan, R. M., & Hunt, S. (1994). The Commitment-Trust Theory of Relationship Marketing. *Journal of Marketing*, *58*(July 1994), 20–38. https://doi.org/10.2307/1252308

Nauta, H. (2019). *De 'voedselscheidsrechter' moet een eind maken aan oneerlijke handelspraktijken*. Retrieved from https://www.trouw.nl/home/de-voedselscheidsrechter-moet-een-eind-maken-aan-oneerlijke-handelspraktijken~a25e21b5/

Oosterkamp, E., Logatcheva, K., van Galen, M., & Georgiev, E. (2013). *Monitoring en observatoria van voedselprijzen Een verkenning van kosten en effecten*. Den Haag: LEI.

Peerlings, J., Polman, N., & Krol, N. (2010). Structural Change in the EU Dairy Sector. *Structural Change in Agriculture*. Berlin.

Peet, G. Van Der, Leenstra, F., Vermeij, I., Bondt, N., & Puister, L. (2018). *Feiten en cijfers over de Nederlandse veehouderijsectoren 2018*.

Perekhozhuk, O., Glauben, T., Grings, M., & Teuber, R. (2016). APPROACHES AND METHODS FOR THE ECONOMETRIC ANALYSIS OF MARKET POWER: A SURVEY AND EMPIRICAL COMPARISON. *Journal of Economic Surveys*, *31*(1), 303–325.

Renda, A., Cafaggi, F., Pelkmans, J., Iamiceli, P., Correia de Brito, A., Mustilli, F., & Bebber, L. (2014). *S TUDY ON THE LEGAL FRAMEWORK COVERING BUSINESS - TO - BUSINESS UNFAIR TRADING PRACTICES IN THE RETAIL SUPPLY CHAIN*. https://doi.org/10.2780/91447

Schebesta, H., Verdonk, T., Purnhagen, K. P., & Keirsbilck, B. (2019). *Unfair Trading Practices in the Food Supply Chain : Regulating Right ? 9*(2016), 690–700. https://doi.org/10.1017/err.2019.2

Schellart, M. (2016). Van Dam wil oneerlijke handelspraktijken aanpakken. Retrieved from Nieuwe Oogst website: https://www.nieuweoogst.nu/nieuws/2016/12/07/van-dam-wil-oneerlijke-handelspraktijken-aanpakken

Sexton, R. (2017). *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?*

Sheldon, I., & Sperling, R. (2003). Estimating the Extent of Imperfect Competition in the Food Industry: What Have We Learned? *Journal of Agricultural Economics*, *54*(1), 89–109. Retrieved from https://econpapers.repec.org/article/blajageco/v_3a54_3ay_3a2003_3ai_3a1_3ap_3a89-109.htm

Smit, P. (2018). Brede steun voor Schouten bij aanpak prijsvorming. Retrieved from Nieuwe Oogst website: https://www.nieuweoogst.nu/nieuws/2018/09/12/brede-steun-voor-schouten-bij-aanpak-prijsvorming

Sociaal-Economische Raad. (2016). *Versnelling duurzame veehouderij*. Den Haag.

Swinnen, J., Beerlandt, H., & Dries, L. (2003). Globalisation , Agricultural Development and Rural Welfare in Transition. *Tijdschrift Voor Economie En Management*, *XLVIII*(May), 619–640.

TLN. (2019). Rijdende Melkontvangst. Retrieved August 16, 2019, from https://www.tln.nl/netwerk/deelmarkt/rijdende-melkontvangst

UK Commission Competition. (2008). *The supply of groceries in the UK market investigation*.

van Brakel, P. (2015). Bedrijfsvormen: Maatschap en VOF. Retrieved from Accon avm website: https://acconavm.nl/kennis/agro/bedrijfsvormen-maatschap-en-vof/?return_id=14952

Vavra, P., & Goodwin, B. (2005). Analysis of price transmission along the food chain. *OECD Food, Agriculture and Fisheries Papers*, (3), 1–58.

Verbeek, M. (2017). *A guide to modern Econometrics* (5th Editio). John Wiley & Sons Inc.

Wageningen Economic Research Centre. (n.d.). Agrimatie. Retrieved from https://www.agrimatie.nl/Default.aspx?subpubID=2232

Wageningen University and Research. (2019). Kringloopwijzer. Retrieved August 14, 2019, from https://www.verantwoordeveehouderij.nl/nl/mijnkringloopwijzer.htm

Williams, R. (2018). *Scalar Measures of Fit : Pseudo R 2 and Information Measures (AIC & BIC)*.

Williamson, O. E. (1979). TRANSACTION-COST ECONOMICS : THE GOVERNANCE OF CONTRACTUAL RELATIONS *. *Journal of Law and Economics*, *22*(2), 233–261.

Wossen, T., Berger, T., & Di Falco, S. (2015). Social capital, risk preference and adoption of improved farm land management practices in Ethiopia. *Agricultural Economics*, *46*(1), 87–97.

Wu, S. Y. (2006). Contract theory and agricultural policy analysis : a discussion and survey of recent developments *. *The Australian Journal of Agricultural and Resource Economics*, *50*, 490–509. https://doi.org/10.1111/j.1467-8489.2006.00317.x

Wu, S. Y. (2013). *Adapting Contract Theory to Fit Contract Farming*. Philadelphia.

ZuivelNL. (2017). *Zuivel in cijfers*. Den Haag.

ZuivelNL. (2019). *Zuivel in cijfers 2018*. Retrieved from http://www.prodzuivel.nl/pz/productschap/publicaties/zic/zicmvh2012.pdf

Appendix 1 Questionnaire

Oneerlijke handelspraktijken in kaart brengen

Deze enquête is ontwikkeld door Wageningen Universiteit om in de Nederlandse melkveehouderij verschillende praktijken in kaart te brengen die als oneerlijk te boek staan. Met de enquête peilen we naar jouw ervaringen met deze praktijken in het eigen zuivelbedrijf. Het onderzoek focust zich op de jaren 2018 en 2014, het jaar net voor de afschaffing van de melkquota.

De enquête bestaat uit 4 onderdelen:

- Karakteristieken van jouw zuivelbedrijf
- Karakteristieken van de zuivelproductie op jouw bedrijf
- Karakteristieken van de relatie die je hebt met jouw zuivelverwerker
- In hoeverre je oneerlijke handelspraktijken tegengekomen bent

De vragen zijn voornamelijk multiple choice en refereren aan jouw bedrijf en de relatie die jij hebt met jouw zuivelverwerker. Je kan zeker zijn dat de enquête geheel anoniem wordt afgenomen, de verschafte informatie wordt met niemand gedeeld en dat jijzelf en je bedrijf niet identificeerbaar zullen zijn na de verwerking van de verschafte informatie. Dus wij zouden blij zijn indien je alle vragen compleet en eerlijk kunt beantwoorden. Dit is heel belangrijk om een beeld van de werkelijke situatie van oneerlijke handelspraktijken in de Nederlandse zuivelsector te krijgen.

De lengte van het interview kan variëren in tijd, maar zal gemiddeld tussen de 20 en de 30 minuten in beslag nemen.

Voor elke vraag is er één antwoord per jaar mogelijk, tenzij anders is aangegeven.

Karakteristieken van jouw zuivelbedrijf

1. Wat is de (juridische) entiteit van jouw bedrijf?
    a. Eenmanszaak
    b. VOF
    c. Maatschap
    d. BV
    e. Anders, namelijk:

2. Wat is jouw geboortejaar (bedrijfshoofd)?

3. Wat is jouw hoogst behaalde diploma (bedrijfshoofd)?
    a. Basisschool
    b. Vakschool (MBO, AOC)
    c. Voortgezet onderwijs
    d. Hogeschool
    e. Universiteit
    f. Geen idee
    g. Anders, namelijk:

4. In welke provincie ligt jouw bedrijf?

5. Wat is jouw geslacht (bedrijfshoofd)?
    a. Man
    b. Vrouw

Karakteristieken van de zuivelproductie op jouw bedrijf

6. Hoeveel melkkoeien had je in onderstaande jaren (op 1 April genoteerd in de gecombineerde opgave)?

	2018	2014
Aantal melkkoeien		

7. Wat is de verdeling van arbeid in uren in een week in je melkveehouderij met evt. andere bedrijfsactiviteiten in 2018 en 2014 (Op 1 April genoteerd in de gecombineerde opgave)?

Jaar	Totale jaarlijkse arbeidsuren boerderij	Daarvan arbeidsuren melkveehouderij
2018		
2014		

8. Hoeveel procent van je (agrarische) inkomen komt voort uit de melkinkomsten in 2018 en 2014?

Jaar	Aandeel
2018	
2014	

9. Wat is het aandeel van het agrarische inkomen in het totale gezinsinkomen in 2018 en 2014 (uitgedrukt in percentages)?

Jaar	Aandeel
2018	
2014	

10. Geef aan hoeveel hectare land voor de volgende doelen werden gebruikt.

	2018	2014
Totale ha landbouwgrond		
Daarvan ha grasland		
Daarvan ha mais		

11. Hoeveel kg melk heb je geleverd in 2018 en 2014?

	2018	2014
Geleverd (kg)		

12. Wie was je (belangrijkste) zuivelverwerker in 2014 en in 2018?

	2018	2014
Naam zuivelverwerker		
Ik wil niet antwoorden		

Karakteristieken van de relatie die je hebt met jouw zuivelverwerker

13. Hoe tevreden was je met de relatie met je zuivelverwerker in 2014 en 2018?

	Helemaal tevreden	Tevreden	Neutraal	Niet tevreden	Helemaal niet tevreden
2018					
2014					

14. Wat is de vorm van je leveringsovereenkomst met je zuivelverwerker?

	2018	2014	**Vervolgvraag**
Individuele leveringsovereenkomst			Vraag 15
Coöperatieve leveringsovereenkomst			Vraag 15
Mondelinge overeenkomst			Vraag 15
Geen van bovenstaande			Vraag 17

15. Hoeveel jaar liep deze leveringsovereenkomst al in 2014 en in 2018?
--> vervolgvraag: vraag 16

	Aantal jaren
2018	
2014	

16. Was de inhoud van je leveringsovereenkomst onderhandelbaar met je zuivelverwerker?

	Ja	Nee
2018		
2014		

17. Is je onderhandelingspositie met je zuivelverwerker veranderd sinds 2014?

Inschatting	Sterk verslechterd	Verslechterd	Gelijk gebleven	Verbeterd	Sterk verbeterd
Keuze					
Vervolgvraag	Vraag 18	Vraag 18	Vraag 20	Vraag 19	Vraag 19

18. Wat was de belangrijkste reden dat je onderhandelingspositie met je zuivelverwerker is verslechterd of sterk verslechterd vergeleken met de situatie in 2014 (kies de meest belangrijke optie)? --> vervolgvraag: vraag 20

Het aantal zuivelverwerkers waar ik aan kan leveren is afgenomen	
Mijn melkveebedrijf is gekrompen	
Het aantal melkveebedrijven in de regio is toegenomen	
Ik ben lid geworden van een coöperatie/producentenorganisatie	
Ik ben lid-af geworden bij mijn coöperatie/producentenorganisatie	
Ander reden, namelijk	

19. Wat was de belangrijkste reden dat je onderhandelingspositie met je zuivelverwerker is verbeterd of sterk verbeterd vergeleken met de situatie in 2014 (kies de meest belangrijke optie)? --> vervolgvraag: vraag 20

Het aantal zuivelverwerkers waar ik aan kan leveren is toegenomen	
Mijn melkveebedrijf is gegroeid	
Het aantal melkveebedrijven in de regio is afgenomen	
Ik ben lid geworden van een coöperatie/producentenorganisatie	
Ik ben lid-af geworden bij mijn coöperatie/producentenorganisatie	
Ander reden, namelijk	

20. Ik kan mijn leveringsovereenkomst gemakkelijk opzeggen.

Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens

21. Wat was de opzegtermijn van je leveringsovereenkomst?

	Aantal maanden	Geen opzegtermijn	Weet ik niet
2018			
2014			
Vervolgvraag	Vraag 22	Vraag 23	Vraag 23

22. Wanneer er sprake was van een opzegtermijn in je leveringsovereenkomst, waren de voorwaarden hiervan... (vul het voor jouw toepasselijke antwoord in)
--> vervolgvraag: vraag 23

	2018	2014
Gelijk(waardig) voor beide partijen		
Zuivelverwerker heeft gunstiger voorwaarden (bijv. kortere opzegtermijn leveringen, enz.)		
Ik heb, als melkveehouder, gunstiger voorwaarden (bijv. kortere opzegtermijn leveringen)		
Weet ik niet		

Oneerlijke handelspraktijken

23. In hoeverre ben je het eens met de stelling dat oneerlijke handelspraktijken een belangrijke probleem waren in de Nederlandse zuivelsector in de ondergenoemde jaren?

Jaar	Helemaal oneens	Oneens	Neutraal	Eens	Helemaal eens
2018					
2014					

Oneerlijke handelspraktijken in de contractinhoud

24. Waren er mechanismen voorzien in de leveringsovereenkomsten in de ondergenoemde jaren die jou beschermen als de zuivelverwerker de leveringsovereenkomst niet zou nakomen?

Jaar	Ja	Nee
2018		
2014		

25. Is het sinds 2014 voorgekomen dat specifieke investeringen bovenwettelijk verplicht werden gesteld door de zuivelverwerker?

Ja	Nee

26. Als deze investeringen vanuit de zuivelverwerker niet verplicht waren gesteld, had je deze dan ook gedaan?

Ja	Nee

Oneerlijke handelspraktijken tijdens contractuitvoering

27. Is een van onderstaande situaties jou overkomen nadat de leveringsovereenkomst al in werking was getreden? Duid alle antwoorden aan die van toepassing zijn.

	2018	2014	Vervolgvraag
Ik werd verplicht om maatregelen te treffen die niet in mijn leveringsovereenkomst stonden			vraag 28
De leveringsovereenkomst is door de zuivelverwerker niet nagekomen			vraag 29
De leveringsovereenkomst is door mij niet nagekomen			vraag 30
Contractuele onderdelen zijn eenzijdig gewijzigd door de zuivelverwerker			vraag 31
De zuivelverwerker heeft inhoudingen gedaan op het melkgeld die niet in de leveringsovereenkomst staan			vraag 32
Geen van bovenstaande			vraag 33

28. Wat was de belangrijkste maatregel die je moest treffen die niet in de leveringsovereenkomst stond?

--> vervolgvraag: vraag 33

Jaar	Belangrijkste maatregel
2018	
2014	

29. Waarom is je zuivelverwerker de leveringsovereenkomst niet nagekomen? Duid alle antwoorden aan die van toepassing zijn.

--> vervolgvraag: vraag 33

	2018	2014
Zuivelverwerker betaalde een lagere prijs dan afgesproken		
Zuivelverwerker heeft mijn melk niet opgehaald of weigerde mijn melk		
Zuivelverwerker betaalde te laat		
Zuivelverwerker eiste andere kwaliteit of kwantiteit dan afgesproken		
Zuivelverwerker heeft extra kosten in rekening gebracht of inhoudingen gedaan		
Andere redenen, namelijk		

30. Waarom ben je de leveringsovereenkomst niet nagekomen? Duid alle antwoorden aan die van toepassing zijn.
--> vervolgvraag: vraag 33

	2018	2014
Omdat mijn melk niet voldeed aan de verwachte kwaliteit of kwantiteit		
Omdat de zuivelverwerker niet op tijd betaald heeft		
Omdat ik mijn melk aan een andere zuivelverwerker verkocht heb		
Andere redenen, namelijk		

31. Welke van onderstaande contractuele onderdelen werden eenzijdig gewijzigd door de zuivelverwerker? Duid alle antwoorden aan die van toepassing zijn.
--> vervolgvraag: vraag 33

	2018	2014
De prijsafspraak		
De vastgestelde kwaliteit		
De vastgestelde kwantiteit		
Andere elementen van de leveringsovereenkomst (bijv. lening, informatieverschaffing, melkafname)		
Uitbreiding leveringsvoorwaarden kwaliteitsborgingsystemen		
Anders, namelijk		

32. Wat was de belangrijkste reden voor deze inhoudingen?
--> vervolgvraag: vraag 33

Jaar	Belangrijkste reden 2018	Belangrijkste reden 2014
2018		

Oneerlijke handelspraktijken na afronding van de leveringsovereenkomst

33. Welke van onderstaande situaties is op jou van toepassing? (vul het voor jouw toepasselijke antwoord in)

Mijn leveringsovereenkomst is beëindigd ...	2018	2014
... door mijzelf (eenzijdig) voor het einde van de opzegtermijn		
... door mijn zuivelverwerker (eenzijdig) voor het einde van de opzegtermijn		
... in onderling (goed) overleg voor het einde van de opzegtermijn		
Mijn leveringsovereenkomst loopt door		

Appendix 2 Correlation Matrix

	No_Cows	Total_HA	Dur_cont	comp	Perc_labour	Perc_dairy_total	D_coop	Perc_grass	D_fam	Age	Educ	D_Man
No_Cows	1.000											
Total_HA	0.858***	1.000										
Dur_cont	-0.131	-0.121	1.000									
Comp	0.157*	0.113	-0.079	1.000								
Perc_labour	-0.086	-0.114	0.103	-0.047	1.000							
Perc_dairy_total	0.069	-0.013	0.118	0.117	0.147*	1.000						
D_coop	0.035	0.035	-0.076	-0.426***	0.136*	0.038	1.000					
Perc_grass	-0.139	-0.134	-0.062	-0.02	-0.011	-0.005	0.181**	1.000				
D_fam	-0.125	-0.101	0.058	0.212**	0.199**	0.111	0.068	0.269***	1.000			
Age	-0.193**	-0.181**	0.406***	-0.124	0.110	0.061	-0.153*	-0.027	0.069	1.000		
Educ	0.005	-0.024	-0.163*	-0.03	0.069	-0.051	0.123	0.081	0.100	-0.192**	1.000	
D_Man	-0.017	0.098	0.125	0.151*	-0.046	0.061	-0.067	0.042	0.035	0.011	-0.084	1.000

*(10%); **(5%); ***)1%), indicate the level of significance

Appendix 3 STATA Output Probit Model

Model 1

```
. probit D_UTPs1 No_Cows Dur_cont comp Perc_labour Perc_dairy_total D_coop Perc_grass, vce(robust)

Iteration 0:   log pseudolikelihood = -68.591492
Iteration 1:   log pseudolikelihood = -54.655035
Iteration 2:   log pseudolikelihood =   -54.2902
Iteration 3:   log pseudolikelihood = -54.288292
Iteration 4:   log pseudolikelihood = -54.288292

Probit regression                                 Number of obs     =        114
                                                  Wald chi2(7)      =      26.52
                                                  Prob > chi2       =     0.0004
Log pseudolikelihood = -54.288292                 Pseudo R2         =     0.2085
```

D_UTPs1	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
No_Cows	-.0009144	.0026327	-0.35	0.728	-.0060745	.0042456
Dur_cont	-.0035659	.0096268	-0.37	0.711	-.0224341	.0153023
comp	.0372238	.0762061	0.49	0.625	-.1121375	.186585
Perc_labour	.0473082	.0161559	2.93	0.003	.0156431	.0789732
Perc_dairy_total	.0115432	.0061621	1.87	0.061	-.0005343	.0236206
D_coop	-.4676745	.3663558	-1.28	0.202	-1.185719	.2503696
Perc_grass	-.0283425	.0085464	-3.32	0.001	-.0450932	-.0115918
_cons	-3.358363	1.743923	-1.93	0.054	-6.776388	.0596628

```
. mfx

Marginal effects after probit
      y  = Pr(D_UTPs1) (predict)
         =  .23349828
```

variable	dy/dx	Std. Err.	z	P>|z|	[	95% C.I.	]	X
No_Cows	-.00028	.00081	-0.35	0.729	-.001862	.001301		113.325
Dur_cont	-.0010919	.00296	-0.37	0.712	-.006898	.004714		23.386
comp	.0113984	.02341	0.49	0.626	-.034476	.057273		4.40351
Perc_l~r	.0144864	.00449	3.23	0.001	.005695	.023278		92.2193
Perc_d~l	.0035347	.00193	1.83	0.067	-.000241	.007311		80.1864
D_coop*	-.1357754	.09931	-1.37	0.172	-.330417	.058866		.359649
Perc_g~s	-.0086788	.00269	-3.22	0.001	-.013955	-.003402		87.0088

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Model 2

```
. probit D_UTPs1 No_Cows Dur_cont comp Perc_labour Perc_dairy_total D_coop Perc_grass D_fam Educ D_Man , vce(robust)

Iteration 0:   log pseudolikelihood = -68.591492
Iteration 1:   log pseudolikelihood = -51.389143
Iteration 2:   log pseudolikelihood = -50.736719
Iteration 3:   log pseudolikelihood = -50.733886
Iteration 4:   log pseudolikelihood = -50.733886

Probit regression                               Number of obs     =        114
                                                Wald chi2(10)     =      31.10
                                                Prob > chi2       =     0.0006
Log pseudolikelihood = -50.733886               Pseudo R2         =     0.2603
```

D_UTPs1	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
No_Cows	-.0015053	.0026511	-0.57	0.570	-.0067014	.0036908
Dur_cont	-.0055321	.0100698	-0.55	0.583	-.0252685	.0142043
comp	.1025189	.0847844	1.21	0.227	-.0636554	.2686932
Perc_labour	.0564337	.0191621	2.95	0.003	.0188767	.0939907
Perc_dairy_total	.0131571	.0063575	2.07	0.038	.0006967	.0256176
D_coop	-.3843185	.3889174	-0.99	0.323	-1.146583	.3779456
Perc_grass	-.0263888	.0092664	-2.85	0.004	-.0445507	-.008227
D_fam	-.9094972	.374761	-2.43	0.015	-1.644015	-.1749792
Educ	.0957589	.2016561	0.47	0.635	-.2994797	.4909975
D_Man	.8038444	.5678727	1.42	0.157	-.3091657	1.916855
_cons	-5.091369	2.239858	-2.27	0.023	-9.481409	-.7013285

```
. mfx

Marginal effects after probit
      y  = Pr(D_UTPs1) (predict)
         =  .21443866
```

variable	dy/dx	Std. Err.	z	P>|z|	[	95% C.I.	]	X
No_Cows	-.0004392	.00078	-0.56	0.572	-.001963		.001085	113.325
Dur_cont	-.001614	.00298	-0.54	0.588	-.00745		.004222	23.386
comp	.0299095	.02473	1.21	0.227	-.018563		.078382	4.40351
Perc_l~r	.0164643	.00474	3.48	0.001	.00718		.025749	92.2193
Perc_d~l	.0038385	.00192	2.00	0.046	.000075		.007602	80.1864
D_coop*	-.1070938	.10241	-1.05	0.296	-.307815		.093627	.359649
Perc_g~s	-.0076989	.00289	-2.66	0.008	-.013365		-.002033	87.0088
D_fam*	-.3055146	.12758	-2.39	0.017	-.555577		-.055453	.77193
Educ	.0279373	.05848	0.48	0.633	-.086675		.142549	3.20175
D_Man*	.174461	.08601	2.03	0.043	.005893		.343029	.894737

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Model 3

```
. probit D_UTPs2 No_Cows Dur_cont comp Perc_labour Perc_dairy_total D_coop Perc_grass, vce(robust)

Iteration 0:   log pseudolikelihood = -51.363978
Iteration 1:   log pseudolikelihood = -47.878834
Iteration 2:   log pseudolikelihood = -47.827237
Iteration 3:   log pseudolikelihood = -47.827152
Iteration 4:   log pseudolikelihood = -47.827152

Probit regression                                 Number of obs     =        114
                                                  Wald chi2(7)      =       9.14
                                                  Prob > chi2       =     0.2431
Log pseudolikelihood = -47.827152                 Pseudo R2         =     0.0689
```

D_UTPs2	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
No_Cows	.0028152	.0022787	1.24	0.217	-.0016509	.0072814
Dur_cont	-.0059079	.0097465	-0.61	0.544	-.0250108	.0131949
comp	.0635527	.0777269	0.82	0.414	-.0887892	.2158945
Perc_labour	.0075004	.0121399	0.62	0.537	-.0162934	.0312943
Perc_dairy_total	.004316	.0066944	0.64	0.519	-.0088047	.0174367
D_coop	-.1166549	.3535333	-0.33	0.741	-.8095674	.5762575
Perc_grass	.0198486	.0110332	1.80	0.072	-.0017761	.0414733
_cons	-4.221103	1.698401	-2.49	0.013	-7.549908	-.8922973

```
. mfx

Marginal effects after probit
      y  = Pr(D_UTPs2) (predict)
         =  .14973866
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
No_Cows	.0006556	.00053	1.24	0.215	-.000381	.001692	113.325
Dur_cont	-.0013759	.00228	-0.60	0.546	-.005837	.003085	23.386
comp	.0148006	.01803	0.82	0.412	-.020545	.050146	4.40351
Perc_l~r	.0017468	.0028	0.62	0.532	-.003736	.007229	92.2193
Perc_d~l	.0010051	.00157	0.64	0.523	-.002082	.004092	80.1864
D_coop*	-.026708	.07979	-0.33	0.738	-.183102	.129686	.359649
Perc_g~s	.0046225	.00253	1.83	0.067	-.000332	.009577	87.0088

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Model 4

```
. probit D_UTPs2 No_Cows Dur_cont comp Perc_labour Perc_dairy_total D_coop Perc_grass D_fam Educ D_Man , vce(robust)

Iteration 0:   log pseudolikelihood = -51.363978
Iteration 1:   log pseudolikelihood = -47.379247
Iteration 2:   log pseudolikelihood = -47.335259
Iteration 3:   log pseudolikelihood = -47.335222
Iteration 4:   log pseudolikelihood = -47.335222

Probit regression                                 Number of obs     =        114
                                                  Wald chi2(10)     =      10.44
                                                  Prob > chi2       =     0.4024
Log pseudolikelihood = -47.335222                 Pseudo R2         =     0.0784
```

D_UTPs2	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
No_Cows	.0028192	.0022106	1.28	0.202	-.0015136	.007152
Dur_cont	-.0063003	.0105879	-0.60	0.552	-.0270523	.0144516
comp	.0637898	.0818397	0.78	0.436	-.0966131	.2241927
Perc_labour	.0065728	.0125501	0.52	0.600	-.018025	.0311705
Perc_dairy_total	.004581	.0065027	0.70	0.481	-.0081641	.0173261
D_coop	-.118743	.3499816	-0.34	0.734	-.8046943	.5672082
Perc_grass	.0185013	.0108389	1.71	0.088	-.0027426	.0397451
D_fam	-.1249285	.3694878	-0.34	0.735	-.8491112	.5992542
Educ	.1587003	.2046808	0.78	0.438	-.2424667	.5598673
D_Man	.3435074	.5648403	0.61	0.543	-.7635592	1.450574
_cons	-4.752811	1.958471	-2.43	0.015	-8.591344	-.9142779

```
. mfx

Marginal effects after probit
      y  = Pr(D_UTPs2) (predict)
         =  .14912536
```

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
No_Cows	.0006548	.00051	1.28	0.201	-.000348	.001658	113.325
Dur_cont	-.0014633	.00245	-0.60	0.551	-.006274	.003348	23.386
comp	.0148152	.01887	0.79	0.432	-.022167	.051797	4.40351
Perc_l~r	.0015265	.00287	0.53	0.595	-.004095	.007148	92.2193
Perc_d~l	.0010639	.00153	0.70	0.486	-.001932	.00406	80.1864
D_coop*	-.0271023	.07878	-0.34	0.731	-.181504	.127299	.359649
Perc_g~s	.0042969	.0025	1.72	0.085	-.0006	.009194	87.0088
D_fam*	-.0300412	.09117	-0.33	0.742	-.208723	.14864	.77193
Educ	.0368582	.04751	0.78	0.438	-.056256	.129972	3.20175
D_Man*	.0687782	.09398	0.73	0.464	-.115411	.252967	.894737

(*) dy/dx is for discrete change of dummy variable from 0 to 1