



Farmers management of fluctuating market prices for wheat and oilseeds

– A case study of Swedish grain farmers

Lantbrukares hantering av fluktuerande marknadspriser för vete och oljeväxter

– En fallstudie på växtodlare i Sverige

Caroline Beck-Friis & Vilhelm Linde

Master's thesis • 30 credits

Swedish University of Agricultural Sciences, SLU

Department of Economics

Agricultural program – Economics and Management

Degree project/SLU, Department of Economics ISSN 1401-4084, 1347

Uppsala 2021



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Caroline Beck-Friis & Vilhelm Linde

Supervisor: Hans Andersson, Swedish University of Agricultural Sciences, Department of Economics
Examiner: Richard Ferguson, Swedish University of Agricultural Sciences, Department of Economics

Credits: 30 credits
Level: A2E
Course title: *Master thesis in Business Administration*
Course code: EX0904
Programme/education: Agricultural Economics and Management, Master's Programme
Course coordinating dept: Department of Economics

Place of publication: Uppsala
Year of publication: 2021
Cover picture: Tord Linde
Title of series: Degree project/SLU, Department of Economics
ISSN: 1401-4084

Keywords: agriculture, business administration, forward contract, futures contract, grain farmers, grain marketing, grain marketing strategy, handelsbanken, hedging

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Abstract

Since joining the European Union in 1995, food policy in Sweden has gradually undergone significant changes. Before that, the policy was thoroughly guided by ensuring and prioritizing domestic production, which was done through a system of price controls. The change since then has adapted agricultural production to today a more global market economy system.

The consequence of a greater variation in the price gave rise to the fact that the time of delivery of grain had a significant effect on the price. Thus, the importance of writing a contract before delivery was given a purpose to know the sales price. Traditional agreements for the physical delivery of agricultural products are usually spot prices, pool prices and forward contracts. Furthermore, there are also financial futures contracts. Production risk will however continue to be an uncertain factor, which means uncertainty about the quantity and quality of the harvest until it is completed. To agree on delivery in advance at a certain price, it is required that the uncertain factors are considered by the farmer. The risks are thus many in agriculture and in summary, it may require market monitoring and fixed assets. Furthermore, the relationship with partners could play a large part in this risk management. The conclusion is that farmers' handling of fluctuating prices can seem very different. The purpose of this study is therefore to further investigate how farmers handle fluctuating prices during sales and the reasoning about it. The starting point is to compare those who use financially traded exchange futures and those who have chosen not to do so.

This study applies a qualitative research strategy with interviews of 12 respondents in Sweden. Of these twelve, half use financial futures contracts, further referred to in the study as futures users. The other half do not use financial futures contracts and are referred to as non-futures users. The study compares the theoretical foundations of social capital, transaction costs, risk management, and the decision-making process for futures users and non-futures users.

The results of the study show that the choice of using either futures trading or fixed-price contracts is primarily based on market interest in stock exchange trading. Furthermore, the argument is that some production risks are eliminated when applying standardized futures contracts. The tendency is that the experience of being a highly indebted farmer tends to choose the safe over the uncertain, and an increase in the use of fixed-price contracts or financial futures contracts can be seen in those cases. In conclusion, it can be stated that non-futures users tend to follow a similar strategy to a somewhat greater extent over the years. It can also be stated that non-futures users to some extent complement futures contracts with higher social capital, by discussing more prices and market events with sellers, neighbours or colleagues. Furthermore, non-futures farmers spend slightly less time on market surveillance after a decision has been made. The time for deciding to sign a contract is in most cases relatively different, which is based on the fact that the price is the major factor when it comes to financial futures trading. The same also applies to contracts with physical deliveries, however, greater caution before winter due to the risk that the crop will not survive the winter.

Keywords: Agriculture, Business administration, grain marketing strategy, grain marketing, futures contract, forward contract, grain farmers, Handelsbanken, hedging

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Abbreviations and Technical Terms

SLU	Swedish University of Agricultural Sciences
CAP	Common Agricultural Policy
EU	European Union
SJV	Jordbruksverket ¹
SOU	Statens offentliga utredningar ²

¹ In English: Swedish board of agriculture

² In English: The government's official investigations

1. Introductions

This chapter presents the background information and problem definition of the thesis. This is followed by a description of common marketing strategies. Thereafter the aim of the study and research questions are defined. It is finally followed by delimitations of the thesis project and outline of the study.

For centuries, grain has been an important part of human food production and remains so until this day. Today, half of the world's arable land is used for grain production (SJV, 2014:08). Sweden is a country that is self-sufficient in terms of grain production and, on top of that, exports about one million tons of grain each year (Jordbrukverket, 2020). Swedish grain farmers mostly produce wheat, barley and oats (Jordbrukverket, 2020) and the price of such grain has long been constant due to market interventions by the Swedish government (Sjv, 2008:1). This naturally resulted in bad weather conditions being the riskiest part of Swedish agriculture, seconded by other production factors, whereas farmers abroad also face the challenge of fluctuating world market prices (Da Silveira et al., 2014; Selvaraju, 2010; Wright, 2010; Hardaker et al., 2004).

1.1 The grain market

Until 1990, Swedish agriculture had been subject to price regulations in form of border protection and internal market regulations by the state of Sweden. In June 1990, however, the government of Sweden decided that Swedish agricultural policy should be changed and further become more market-oriented (SJV, 2014:21). Food production would be governed by the consumers. In the summer of 1991, the Swedish governments applied for membership in the European Union, EU, which became reality in the year 1995 (SJV, 2012:11). However, the free market-based food production did not remain fully realized as the Common Agriculture Policy (CAP) was introduced. Area-based support decoupled from production instead became reality for Swedish farmers (SJV, 2014:21). When Sweden remained one of the member states of the EU, the conditions thus gradually changed for agricultural companies when selling their products. Membership meant that farmers needed to comply with the EU's food policy and production (Brassley, 1997). Nowadays, the EU's market is an open market that is determined by supply and demand and the price is given accordingly, which means a fluctuating price market (Pennings, 1997 and Iwarsson, 2012). Since Sweden's national regulations maintain a higher level of restrictions than some other member countries, local farmers may be disadvantaged on the international market as these regulations often lead to higher production costs than similar farmers abroad (SOU 2015:15; Ekman &

Gullstrand, 2006). The development that was decided in the early 1990s led to the agricultural sector turning into a more market-economy system based on supply and demand (Runge, 1988; Bolin & Rabinowicz, 1987). Furthermore, since becoming a member of the EU, Swedish agriculture is no longer subject to price regulations. Instead, free trade policy reforms have led to new conditions for farmers in the member states. This means that Swedish agricultural businesses now face a market that is constantly affected by price fluctuations throughout the year (SOU 2015:15; Ekman & Gullstrand, 2006; Pennings, 1997). This phenomenon will hereafter be referred to in the study as price risk. As a result, farmers have had to learn to handle a greater degree of price-variation in food products. Thereby, the need to develop a marketing strategy to avoid selling products at a low price in a market environment (Andersson & Lidfeldt, 1994; Pennings, 1997). By doing this, the objective is to reduce price risk and avoid selling at a price that is economically unfavorable from a business economics perspective.

Smaller European Union member states, such as Sweden, are not able to influence the market in terms of prices (Agronomics, 2020). The world market price is affected by a few large players and member countries, and Sweden is accordingly too small viewed from the perspective of the volume of production. This results in an imperfectly competitive market for Swedish farmers (Santermero & Lamonaca., 2019). A commodity market that often experiences price changes stresses the importance of having access to various methods that make it possible to ensure against unwanted price changes (Hardaker et al., 2004). An efficient tool to manage price risk is hedging with futures contracts (Miller et al., 2004; Da Silveira et al., 2014). Traditionally, forward and futures contracts are the basic fundamental tools for managing price risk (Rolfo, 1980; Lidfeldt & Andersson, 1994). Both futures and forward contracts secure the price in advance, which is also called hedging. The word hedging itself means to defend yourself which also explains the meaning of the concept of price risk. Hedging is a marketing strategy that aims to secure losses against price fluctuation by locking in a price in advance (Boehjle & Trede, 1977). The goal is to reduce price risk by investing through sales or position-related assets (Lidfeldt & Andersson, 1994).

In summary, it can be said that futures markets allow price risk to be transferred (Rolfo, 1980; Pennings, 1997). Even though futures contracts have been traded for a long time on the other side of the Atlantic Ocean, it has been more common in Sweden in recent years to transfer price risk (Iwarsson, 2012). Further, to hedge against uncertain prices, farmers need to be active in the exchange-traded futures market. *Marché à Terme International de France (MATIF)*, *London International Financial Futures and Options Exchange (LIFFE)* or the American market *Chicago Board of Trades (CBOT)* are examples of these. A farmer cannot make trades on

the financial market by themselves and therefore needs an intermediary who handles the transactions, which are a few in Sweden.

According to the Swedish Board of Agriculture in a report from 2016, it demonstrated a decreased number of agricultural businesses in Sweden (SVJ, 2016). From 1990 until 2016 the number has been reduced by 35%. Farms with comparable larger tillable acreage have instead increased while farms of smaller size have been reduced. The trend towards fewer farmers but larger areas creates an increased risk situation due to larger volumes to sell and thus a profitability problem. Due to the existence of larger farms with major income from crop production, risk management and consequently increasing managerial demands upon the farmer are emphasized.

A farm manager must not only conduct various activities relating to managing financial capital but also for social capital. Investing in networks and other social capital facilitates processes as formal contracts, agreements or information gathering given that there is trust between business partners the other parties are more likely to comply (Nilsson et al., 2012). Nilsson et al. argue that if a customer has a high trust in the company, they will be more willing to pay a higher price and buy larger volumes.

Previous studies have shown that farms with the ability to store grain increase the freedom of choice for agricultural companies to sell when the price is at its best (Ugander et al., 2012). This means that the opportunity to wait for a higher price and selling at any time during the year to most different players increases the opportunities for improved profits (ibid). The possibility of being able to store grain at the farm thus constitutes a tool for managing the price risk when selling the product but storage also enhances asset fixity (Riordan & Williamson, 1985). Because of this, the precondition for establishing a conscious strategy for managing the price risk exposure is clear. Further, the opportunity of storage entails the farmer to choose between a larger number of buyers, which plays a greater role in the decision process, but this also yields search costs (ibid). Some buyers are not able to receive all the grain at the same time, which means that the harvest needs to be stored and delivered in portions over a period (Ugander et al., 2012).

In summary, the risk of selling products on the world market for a price that is lower or the same as the production costs is a factor that affects many farmers all over the world today (Da Silveira et al., 2014). As such, the point in time when the farmer sells their goods is a factor that may have a large impact depending on the price level of grain at that specific moment (Da Silveira et al., 2014). Price fluctuation in commodity markets is, according to Wright (2010) difficult to predict, which

increases the motivation to manage price risk exposure for farmers in a sustainable way (Hardaker et al., 2004). As such, this situation stresses the need for conscious risk management strategies for Swedish farmers (Nilsson, 2001). The different marketing strategies that are commonly used will hereafter be introduced.

1.2 Marketing strategies

The aforementioned marketing strategies are futures and forward contracts, but other common available marketing strategies used in Sweden also include spot delivery and pool agreements (Nilsson, 2001). These traditional tools will henceforth be denoted as grain marketing strategies if no special strategy is referred to. Forward and futures contracts are seen as traditional methods of managing price risk since it is a contract that almost secures a given price before delivery (Rolfo, 1980; Lidfeldt & Andersson, 1994), -whereas spot delivery and pool agreement do not secure a given price in advance.

1.2.1 Spot delivery

The first alternative, *spot delivery*, is where uncontracted goods can be signed and delivered throughout the whole year. This could also be called the cash market, which means a market where the grain is physically delivered against payment, without being contracted in advance (Lidfeldt & Andersson, 1994). By this, spot prices are observed daily. To be able to use spot delivery at other times than directly after the harvest, the farmer needs storage facilities for the harvest. When a commodity has been delivered, payment will usually be provided another 30 days after delivery (Lantmännen, 2020).

Storage agreement

An alternative is to make a storage agreement with the buyer, which binds the delivery to the specific actor. This means that the harvest is delivered, but for a fee not sold until later, against the projection that the daily price will increase (Lantmännen, 2020). Storage agreements will henceforth be referred to as a form of spot price because the price is not known in advance.

1.2.2 Futures contracts

The second alternative is the *futures contract*, which is a standardized financial contract where the given volume, time and price are settled. It lasts for a year from the day it is signed and can be bought back before the contract expires. Futures contracts are financial markets that are existing parallels to the physical market and offer two actors: Hedgers and speculators (Lidfeldt & Andersson, 1994). Hedgers are individuals who want to buy or sell a certain commodity to protect themselves against uncertain prices, by taking an opposite position in the futures market

(Andersson & Lidfeldt, 1994). Speculators, on the other hand, are actors who accept the price risk in connection with futures contracts, in hope of making a profit, without controlling the physical commodity. At the same time, liquidity is added to the market. It provides traders and non-traders with information such as current market conditions as well as expected demand and supply conditions in the futures. The reason is that their decisions about whether to participate in the futures market or not. This offers the opportunity for hedging and speculation and, thereby, the possibility to stabilize fluctuating prices (Allgood et al., 2010).

“The most elementary aspect of a futures market is its function as a market where people can insure against the price fluctuations of some underlying commodity or security” (Grossman, 1986, p.131). As Grossman (1986) writes in the quote, is the motivation for hedging cash prices with offsetting contracts to reduce cash price risk. To ensure a futures price can be seen as an insurance service that insurance companies should be responsible for, but since food is similar all around the world it has been possible to standardize the contracts. The price is the only factor that is not decided which makes it easy to trade with these contracts on the stock market.

In other words, futures trading is the platform where hedgers transfer risk to speculators (Rolfo, 1980; Pennings, 1997). This method offers the farmer an opportunity to hedge the quantity produced based on what the farmer believes about the price of grain in the future. If grain later decreases in price, the farmer can buy back their contract for a lower price than it was sold for, and thereby make a profit on the price difference. In case the grain price increase, the physical grain commodity can be sold to any buyer (Bohelje, 1977). The hedger signs the contract at a price that he or she is satisfied with. If prices increase the hedger will make a loss at the futures market, but benefit from an increase in the price of the physical commodity. In traditional hedging, the futures contract is repurchased at the same time as the physical crop is sold at the cash/spot market (Andersson & Lidfeldt, 1994). This is the most common method, but the seller can also wait until the contract expires, and when that happens the farmer has to buy back the contract at the current futures price quote.

1.2.3 Forward contract

The third alternative, the *forward contract*, is an adapted contract, similar to the previous option but here the producer and the buyer agree on a physical quantity of a specific grain. Quantity, quality, price and delivery time are determined in advance (Gottesman, 2016). If the given volume or quality is missing, the seller has to either compensate by discounting the price or buy additional grain to complete the delivery. These contracts can be designed in many different ways and custom-tailored for the involved parties, where the degree of flexibility is negotiable.

However, when an agreement has been entered between the parties concerned it is legally binding for both. By using a forward contract, the farmer “locks-in” a certain price that cannot be changed afterward. By this action, eliminates the risk of falling prices, but also misses the opportunity of a price rise after the agreement is signed (Allgod et al., 2010). The buyer has to pay the agreed price, and the farmer usually must deliver 90% of the agreed quantity, and the agreed quality must be met (Lantmännen, 2020). Considering production risk may however prevent the farmer from selling the entire expected harvest in advance

1.2.4 Pool agreement

The fourth option is the *pool agreement*. With this option, the farmer chooses to sell grain with the possibility of receiving an average price for a certain period. This entails the opportunity for farmers to take advantage of a possible price increase after harvest delivery. The conditions for using this agreement could be different depending on the buyer, but in the study, Lantmännen’s pool agreement will be exemplified. However, the most common pool agreement has a delivery period during 1 July – 14 October. Furthermore, this entails an average price for the commodity during the time of April – November (pers. Comm., Gerhardsson, 2020). For pool agreements, the buyer monitors the market daily and makes ongoing sales of the farmers’ grains intending to obtain the highest price possible (Lantmännen, 2020). Furthermore, when a pool agreement has been signed, it needs to be fulfilled to 70% of the volume according to the regulations at Lantmännen (ibid). Pool price could, according to Nilsson (2001) be considered as an average price for cereals sold during the pool period. Usually, farmers receive a part of the payment 30 days after delivery, and the rest of the payment is received in December when the average price has been settled (Lantmännen, 2020). Henceforth, the study refers to this contract when mentioning pool price, pool agreement or just pool.

1.2.5 Empirical problem

To illustrate the structure of the problem within the different above-mentioned marketing strategies for Swedish grain growers, an empirical problem between the price development in the strategies will hereafter be described. The empirical problem analyzes the managerial problem facing the farmers when selecting the marketing strategies with physical product contracts, to show a real-world example of farmers’ problem. The empirical problem illustrates price statistics for milling wheat and oilseeds since these are those which are available to hedge in the futures markets (Lantmännen, 2020). To make the grain marketing strategies comparable, this study is focusing on the grain marketing process for oilseeds and milling wheat.

Data presented in figure 1 shows the physical price development between the different marketing strategies within the years of 2014 – 2021. These are price

statistics for grain and oilseeds from Lantmännen (pers. Comm., Gerhardsson, 2020). Prices may vary a few percentages from other buyers, but these figures serve to illustrate the problem from an economic perspective. However, the graph compares commodity prices with different marketing strategies with harvest delivery (Pers mess. Per Gerhardsson, 2020). Further, as the spot price is set daily, the graph displays the average price during August from each year. Pool price illustrates statistics from the final pool price over the years. The forward contract in this example is signed in November and expected to be delivered during the harvest period the following year. Because of the lack of empirical statistics, there are missing statistics with forward contracts before 2017. Statistics from spot prices at oilseeds are also missing from the year 2020, but the trend can still be seen.



Figure 1. Spot, pool and forward prices at harvest delivery (unpublished material from Lantmännen, 2020). Milling wheat and oilseeds. Own illustration.

To summarize, the average spot prices during harvest tend to receive the lowest price, except for the crisis year of 2018. Pool price is higher than spot price during most years, and forward contracts tend to enable the greatest payment within years of normal yield around the world. However, the year, on the contrary, is 2018 due to the drought and thereby decreasing supply in the market (LRF Konsult, 2018). The managerial problem facing the farmers is to choose the strategy which enables the highest possible price given a certain level of risk exposure. Assuming that one farmer produces 1000 tons of wheat, the total economic payment between the spot price and pool price would be a significant difference. The situation of choosing the best possible agreement is therefore associated with the most uncertain factors. The planning problem that has to be addressed in this scenario would therefore be the

risk of not being able to fulfill the contract when signing a physical agreement in advance.

Standard deviation

To show how prices fluctuate between and during the years with different marketing strategies, table 1 illustrates this by statistical history. Standard deviation is a statistical measure of how much different values differ from the average value (Wahlin, 2011). That is, if the price is low, it is close to the average prices which entails a more stable price development over the years. A higher price in the table below entails more fluctuating prices. However, if farmers in advance want to ensure the price, or anyhow avoid volatile prices, the need for a low standard deviation is given. A higher standard deviation in prices entails higher uncertainty but also enables higher prices. As shown in table 1, spot prices tend to have the highest standard deviations which means the most fluctuation strategy. The standard deviation continues to fall slightly at pool prices. Finally, the price of forward contracts tends to yield the lowest standard deviation, which shows that forward is the most stable strategy according to historical statistics. This trend is visible for both milling wheat and oilseeds.

Table 1. Standard deviation of the effective price obtained given different grain marketing strategies over the year 2014-2021.

Strategy	Wheat	Oilseeds
<i>Spot</i>	278 SEK/ton	380 SEK/ton
<i>Pool</i>	158 SEK/ton	313 SEK/ton
<i>Forward</i>	86 SEK/ton	180 SEK/ton

The graph in figure 2, displays that in most years, the price makes a dip during harvest time. In the example of wheat and oilseeds, this is illustrated with the red dot during August and September. The only exception was in 2018, due to a decreasing supply and therefore price increased (LRF Konsult, 2018). However, in most years, this fluctuation in the price entails an opportunity for farmers with storage potential, the option to sell at a different time during the year. By doing so, to obtain better prices and reduce risk exposure during harvest sales (Iwarsson, 2012). In other words, avoid marketing the harvest away from the market during periods of low price.

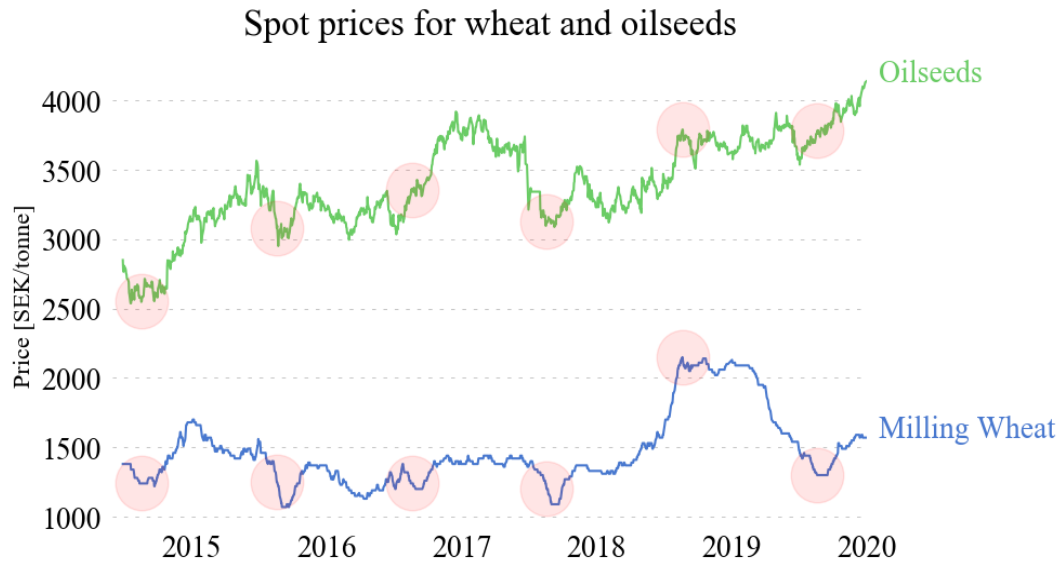


Figure 2. Spot prices, own illustration (unpublished material from Lantmännen, 2020).

1.3 Problem statement

Previous studies have shown both more price stability and less price varying results of farmers that hedge (Nilsson, 2001). The conclusion is that farmers need to be inserted in the process of hedging and read on the subject to improve risk management (Boehlje & Trede, 1977). Furthermore, social capital enables greater opportunities and plays a certain role in the choice of marketing method. Social capital matters to negotiate better prices, according to Nilsson et al. (2012). However, previous studies state that farmers do not make rational economic decisions and futures contract is relatively unusual (Pannell et al., 2006; Simmons, 2002). This could be because academic theory may differ from farmers' reality since there is a majority of factors that affect farmers' decisions in real life (Boehlje & Trede, 1977). Factors such as a social network that affects economic behavior, is something Uzzi (1997) stresses to be a topic that must be further examined. To the best of our knowledge, few studies consider these factors. Therefore, this study focuses on the farmers' decision-making process, their preferences and behaviors regarding price risk management problems and choosing marketing strategies in the presence of social capital consideration.

1.4 Aim

This thesis examines how farmers with most of the plant production on the farm handle uncertain pricing of grain and oilseeds over the year. Furthermore, the choice of sales method and what strategies may exist are examined, together with external factors such as how social capital and transaction costs may influence the risk management decision.

This study aims to develop an understanding of risk management strategies for farmers with or without financial trading on the futures market. An increased understanding of how farmers make their decisions between marketing strategies could lead to opportunities to give farmers to better protect their financial standing.

1.4.1 Research questions

- What marketing strategies do farmers use for managing price risk and why?
- What factors affect the choice between futures and forward contracts?

1.5 Delimitations

The delimitations in this study were defined to analyze agricultural companies that face the managerial problem. Respondents of this study were chosen to include farmers that use financial futures contracts and farmers that do not use them within their grain marketing process. The geography was limited to Skåne, Mälardalen, Värmland, Stockholm and Sörmland. In Sweden, to obtain a wider perspective and note if any significant differences according to the farmers' location. Regarding farm selection, the study will focus on grain producers without livestock production. The explanation is the risk management within only a grain farm differs from production with both grain- and livestock production. Because of that risk management could differ in character between farmers that mainly sell grain and farmers who also provide grain for livestock production, alternatively other goods. Further, the study aims to develop an understanding of the problem from a Swedish perspective, which makes it natural to investigate Swedish farmers. The issues that are not addressed in this master thesis is furthermore an analysis of the economically optimal behavior.

1.6 Outline

The first introductory chapter provides background on the issues and important concepts. It presents the aim and research questions of the study. This is followed by chapter two where a literature review and theoretical synthesis is presented, concerning earlier research on the subject. Then there is a description of the method chosen for how the thesis will be carried out in chapter three. The data is subsequent presented following the theoretical synthesis in chapter four, followed by an analysis and discussion of the findings in chapter five. Finally, the last chapter answers the research questions as a conclusion and exemplifies future research in the field of the subject which this thesis did not cover.

2. Literature Review – Theoretical Synthesis

This chapter describes the most common risk management and decision-making theories in recent years. It continues to highlight previous research done on the subject of farmers' decision-making and, subsequently, the research gap concerning grain farmers in particular. It ends in an account of why this type of research is important and what can be gained from studying this problem more closely.

2.1 Risk Management

Previous findings of risk management are many, not least regarding agriculture business and the relevance for economic decisions. According to Harwood et al. (1999), risk management in agriculture is a way of choosing between alternatives to affect the welfare position, by reducing risk impact. Previous research concerning what factors influence risk management decisions is basically about the attitude for risk (Hakelius & Hansson, 2016). The risk attitudes of farmer's behavior have been examined in previous studies using estimating techniques and based on various theories. Attitudes can be defined by a person's response positively or negatively to a person, institution, event or object (Hakelius & Hansson, 2016). Decision-making concerning individual attitudes could both include choosing a certain object, but also differ between individuals that choose to not decide at all (Kahneman & Sudgen, 2005). Kahneman & Sudgen (2005) also argue that attitudes may be defined as a development of physiological objects which consist of different emotions. These feelings then consist of liking, disliking or neither (ibid). Production risk for cereal farmers is mostly caused by unpredictable weather, insects, disease and other diseases that affect crop yields (Hardaker et al., 2015). Associated with unpredictable factors like weather or natural hazards around the world, could the price fluctuate. The price of grain is generally connected to the supply-demand, like any market, which means a low level of grain production often results in higher grain prices (Hardaker et al., 2004; Miller et al., 2004). Besides the fact that the agricultural sector is a business with long turnover periods, fluctuating prices for the products are also a source of uncertainty (Musser et al., 1996).

Literature regarded risk management is divided into two main concepts, uncertainty and risk. The risks and uncertainties that farmers face can be related to the farm business, the farmer itself, or both since the level of risk is connected to a person's welfare (Harwood et al., 1999). If a farmer's health is threatened it does not have a direct effect on the farm but may have an impact on the risk management related to the farm business. Other external risks and threats such as nature, social and

institutional conditions that cannot be affected, influence farmers' business and how the farmers operate (Miller et al., 2004).

Uncertainty is when someone is in a situation and does not know what future outcomes might be. Risks are the consequence of uncertainties, but uncertainty does not necessarily lead to a risky situation. The terms “risk” and “uncertainty” is described by Hardaker et al. (2015) as followed “*risk is imperfect knowledge where the probabilities of the possible outcomes are known, and uncertainty exists when these probabilities are not known*” (Hardaker et al., 2015, p.4). By assuming risk, the probable outcome for the agent that is exposed to risk, could lose welfare or get hurt (Miller et al., 2004). In terms of greater decisions in life or companies, a larger part of the risk is associated with uncertainty, since those decisions often result in a larger difference between potential outcomes. In the agricultural business, Hardaker et al. (2015) argue that several decisions require more attention than others, but many decisions could be made without considering risk. The net effects in the company’s welfare position might require more attention to the alternatives in a decision since Harwood et al. (1999) describe risk management in agriculture as a way to choose between different alternatives.

The impact of farmers’ attitudes towards risk has a major impact on how farmers manage risk (Harwood et al., 1999). In agricultural businesses, risk management is to balance activities with risky outcomes and varying results of expecting returns. By trying to reduce the risks on the farm, also affects the farmer's welfare position (ibid). One risk management strategy could be, for example, to diversify the farm with different enterprises. According to Harwood et al., (1999) major crop producers are most concerned about yield variability and price risk. To reduce this type of risk and manage it, farmers intend to diversify their enterprises. This could for instance be producing two different crops that are not dependent on each other. The result of such a strategy can counterbalance a bad year for one enterprise for a better outcome of another unrelated enterprise (ibid). Further, Harwood et al. (1999) argue that diversity in agricultural production has many similarities with financial instruments.

According to Pindyck & Rubinfeld (2005), individuals’ attitudes toward risk affect the persons’ decision widely. The risk-averse person prefers, if necessary, a safer solution to a problem even though it means lower profit to reduce the likelihood of losses. Indifference, the risk-neutral individual is unbiased to a safe and unsafe solution and make their decision regarding the maximal expected return, no matter if the result would be high or low risk (ibid). The risk-taker individual prefers a risky solution if it means an increasing utility, illustrated in figure 3 (ibid). Pindyck & Rubinfeld (2005) further reveal that a risk-taker is not willing to give up any

profit at all to reduce the risk for a lower profit. This does not necessarily mean that the risk-taker accepts all types of risk no matter the expected income (ibid). However, the risk-taker is willing to accept that profit may be decreased for the opportunity to enhance profits.

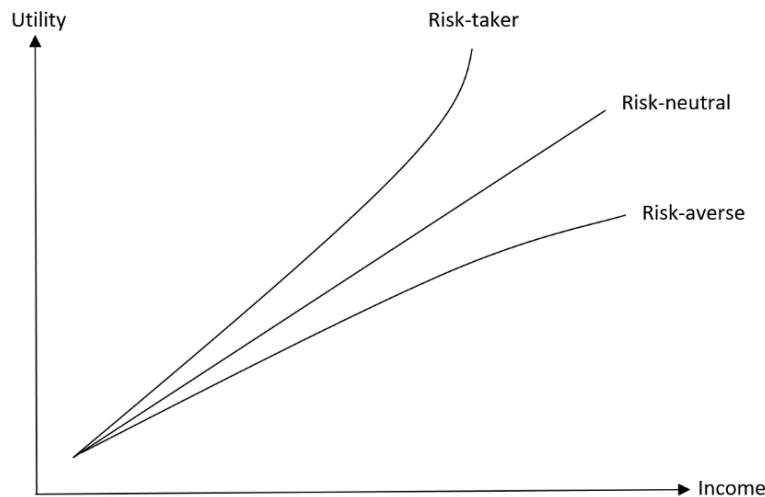


Figure 3. Utility functions with different risk attitudes (Pindyck & Rubinfeld, 2005). Own modification.

Beal (1996) argues that the risk management of farmers often reflects their views and perceptions of risk. People mostly appear to be risk-averse when managing significantly risky outcomes or incomes. Farmers, according to the theory of risk attitudes, tend to be risk-averse (Hansson & Lagerkvist, 2012; Hardaker et al., 2015). This means that producers that are risk-averse rather tend to give up more expected returns to reduce their risk of losing it all (ibid). Different strategies in risk management problems would thereby be used, to protect themselves from risk (Hardaker, 2004). Previous studies also stress that in the context of agricultural business, farmers reveal risk attitudes in ways of using hedging or other contracts, to reduce their risk impact (Lien et al., 2007; Hanson et al., 2004; Hardaker, 2004)

According to Jordaan & Grové (2008), a positive correlation exists between the higher the indebtedness of a company, the less likely the person who makes the decision is to take risks, i.e. risk-averse. They also argue that risk exposure is positively correlated to if the farmer hedges price, and risk aversion seems to be a primary reason for farmers to use forward contracts. Besides, a very risk-averse person could use price hedging even though the result is a lower expected income (ibid). The study by Jordaan & Grové (2008) thus also stresses that farmers use diversification to decrease the risk exposure, for example, find other sources of income besides the farm. Further, according to Turvey & Baker (1990), farmers seem to hedge prices to a larger extent if the financial debt is high, to ensure

economic liquidity, which in that case could be due to their risk-averse attitude (Jordaan & Grové, 2008).

In terms of business risk, Hardaker (2004) views it as in agriculture the risk for production loss, market developments which lead to changing prices as well as the personal risk. Jordaan & Grové (2008) further stress that risk-averse farmers tend to secure the price to a greater extent, and thereby use forward contracts. In terms of selecting marketing strategies, this would be relevant for the farmer depending on their attitude toward risk. Furthermore, uncertainty about weather, market conditions and prices for inputs and outputs are both embedded in the business risk (Hardaker, 2004).

2.1.1 Hedging with both production and price risk

Farming companies are subjected to both price and quantity uncertainty, which means that the farmer cannot accurately predict neither the price nor the level of harvest until the harvest is complete (Rolfo, 1980). However, often producers seem to have a lack of interest in the futures market. According to Rolfo (1980), the reason could be attributable to the fact that farmers' situation is more complex than the merchant's.

Using futures contracts, or any hedging at all reduces price fluctuations by eliminates the highs and lows of prices. The optimal hedge volume leads the farmer to avoid the risk of a bad outcome but also the possibility of a good outcome (Rolfo, 1980). The expected outcome lies in between the highest favorable price and the lowest unfavorable price, which gives price security in advance.

Further, previous studies have examined strategies for managing price risk by using hedging instruments as well as evaluating the optimal hedge ratio. A study conducted by Nilsson (2001) revealed that farmers are likely to reduce price risk by 6-77 percent by using optimal marketing strategies when selling grain. According to Nilsson (2001), the optimal hedge is the share of the harvest that could be hedged, based on a situation where both price and quantity are uncertain. Nilsson (2001) stresses that seen from a Swedish farmer perspective, the optimal hedging volume should be 30 - 50 % of the harvest with forward contracts. Although farmers would benefit from using optimal strategies (Nilsson, 2001), their actual behavior in the market may differ from what would be optimal for the farmers (Pennings, 2003). Although there are many strategies and hedging instruments to choose from to mitigate price risk, there exists limited information on the aspects that affect farmers' decisions to use hedging.

2.2 Decision-making process in agricultural business

Strategic decision-making processes are depicted in different theories that could explain how decisions are made in farm companies (Öhlmér et al. 1998). The conceptual model of the decision-making process by Öhlmér et al. (1998) is one way to explain the process. Their model describes by four phases: detection of the problem, the definition of problem, analysis and choice and implementation. According to Öhlmér et al. (1998), based on their observations, four subprocesses are included beside the phases. These are searching and paying attention, planning, evaluating, choosing and checking the choice. Öhlmér et al. (1998) argue that farmers prefer the opportunity to evaluate their decisions and plans continuously. For instance, farmers are willing to analyze and evaluate a project soon after the decision process, both quick and simple and when time is given more detailed and elaborate analysis (ibid). Gradual implementation through day-to-day decisions and continually checking during the implementation is therefore common in agriculture decisions, according to Öhlmér et al. (1998).

However, according to Öhlmér et al. (1998), the person who is responsible for the economic result of the company is a reason for starting the decision process. The driving force behind examining other options is being responsible for the outcomes it gives. Defining the problem as well as defining the alternatives of the solution, analyzing them and implementing the best alternative is the responsibility of the decision-making.

The process during decision-making is represented by several different aspects and impacts when it comes to a farmer's decision (Darnhofer et al., 2005; Howley et al., 2015). These effects could be individual goals, beliefs, attitudes and different values attributable to (ibid). The level of well-being for the farmer is also influencing the decisions, and their expected utility of the decision (Howley et al., 2015). However, the benefit of a decision is difficult to measure, which has led to the development of simplified models of economic behavior, based on the assumption that farmers maximize the benefits. Subsequent studies have shown that many farmers do not maximize profits and are not rational in their decisions, which conclude that farmer's decisions are affected by the diversity of goals, values, beliefs and attitudes (Willock et al., 1999; Vancouverlay, 2004; Pannell et al., 2006; Grubbström et al., 2014; Howley et al., 2015). To gain as much profit as possible may be important for the farmers, but not the only goal for farmers (Howley et al., 2015). What Howley et al. argue (2015) is that there are different categories of farmers. Some are very economical, and others are driven by values other than money. Most importantly according to Howley et al. (2015), there is no single value that farmers can use, and it is a mistake to assume that farmers always maximize their profits.

Sitkin and Pablo (1992) argue that previous studies have focused on single determinants to explain the behavior regarding risky organizational situations. Since a decision in real life is affected by more than one determinant, Sitkin and Pablo (1992) developed a model with several determinants connected to the decision-making behavior. They argue three main factors influence a decision-maker that must respond to a more or less risky problem: characteristics of the individual decision-maker, characteristics of the organizational context and characteristics of the problem itself. Since agricultural firms often are operated by a single individual (Willock et al., 1999), the characteristics of the individual are a fundamental part of the firm. Öhlmer et al. (1998) describe two kinds of farmer, analytic and intuitive decision-makers which are described further. Those who define quantifiable goals for their farms, are more thorough elaborating their analysis and gradually implementing their ideas, are labeled analytical decision-makers (Öhlmer et al., 1998).

Those who have not formulated quantitative goals and instead conduct “quick and simple” analysis continually are labeled intuitive decision-makers (ibid.). Intuitive decisions concern subconscious knowledge and are not always easily expressed (Okoli & Watt, 2018). Okoli and Watt (2018) developed a theory about the intuitive decision, which is based on Klein's (2003) model that describes the definition as the act of translating life experience into action. This entails problem-solving and decision-making based on what people have learned, either consciously or not, during their previously experienced life (Okoli & Watt, 2018). According to Okoli & Watt (2018), the decision maker's ability to intuitively decide depends on the ability to clear out irrelevant information. Further, Okoli & Watt (2018) argue that experts use their intuition as a strategy when making decisions, but if the conditions differ, an analytical mode is needed. Nuthall & Odd (2018) also support this theory by stating that farm owners which are considered successful, use their advanced intuitive ability. The ability is formed by advice, experience and reflection, but can only be used in situations of low complexity (Öhlmer et al. 1998; von Diest et al. 2020). This means that goals and values must be determined and be able to measure an activity's stability over time (ibid.). Given that becoming the most successful farmer is not everyone's goal, some farmers desire the mental stimulus in making individual choices. They consider by reaching these goals, is more important and satisfactory than aiming for profit-maximizing (Ohlmera et al., 1998). However, any decision-making process must take into account the costs of the different options, which will be covered in the next section.

2.3 Transaction cost

Transaction cost is a term that attempts to explain economic phenomena that cannot be explained by neoclassical theory. Theories that individuals in a society make rational, benefit-maximizing decisions (Hicks, 1935). The term has been applied to many different fields, which has caused the definition to vary and not be standardized (Benham & Benham, 2001). The theory can be depicted as an explanation of costs associated with information search about buyers and sellers on the market and the execution of a transaction (Riordan & Williamson, 1985).

The transaction cost mostly concerns the cost for products to change owner (Abrahamsson & Andersen, 2005). Cooter & Ulen (2016) argue that transaction cost could be the *cost for searching*, *negotiating* and *controlling cost* when conducting a transaction for a service or favor. *Cost for searching* implies the time it takes to find a buyer or seller and the information that is needed before a transaction. Since all relevant market information is not easily available, it takes time to search and to gain suitable knowledge. Lost time costs are linked to transaction costs (Baye et al., 2005). If searching part for market knowledge is easily accessible, then the costs of searching decrease. The *negotiation* that occurs at contract writing which involves both business parties clarifies their demands, is also a part of the transaction cost. In this stage, both business parties have to agree to specifications in the contract as a safety measure in the case of future unforeseen events (Butter & Mosch, 2003). The last part of transaction costs is *controlling cost* which implies their obligations the control costs that includes doing a follow-up to ensure that both parts have been fulfilled (ibid.). Due to these costs, it is important to consider their effects on decision-making, as spending money and time on this initially may not be in the farmer's best interest at the time. An attempt to control may be counterproductive in terms of the particular farmer's needs.

Abrahamsson & Andersen (2005) stress that market failure sometimes could be the result of occurred high transaction costs. Most affected by market failures are farm households with high transaction costs for accessing the market (Cuevas, 2014). This plays a central role in farmers' decision-making when considering transaction costs and resource allocation, according to Cuevas (2014). Furthermore, Pingali, Khawaja and Meijer (2005) argue that small-scale farmers face difficulties entering new markets since they do not have the facilities needed to lower transaction costs.

From an economic point of view, the overall goal of a contractual arrangement should be to maximize profits for the involved parties (Bogetoft & Olesen, 2004). Further, Bogetoft & Olesen (2004) argue that coordination, motivation and transaction cost need to be considered for the parties involved before signing a contract. Coordination implies that the revenues from production as well as the risk

have to be considered. Minimizing the cost of risk and maximizing profits could be described as coordination of production and coordination of risk (Bogetoft & Olesen, 2004). Motivation is further described by three main factors. These are participation, effort and investment (ibid). Furthermore, it is argued that entering a contract, conflict resolution, monitoring and influence cost are aspects that concern transaction costs (ibid). It could further be argued that an additional transaction cost may occur when deviating from a norm or a certain pattern, in other words by doing different than before (Larsén, 2008).

One major reason why international trade flow less than traditional trading, is the transaction costs. Trading partners that trust each other lowers the transaction costs are attributable to searching information about a trading partner and its products or previous behaviour, control costs, legal costs and costs of international payments (Butter & Mosch, 2003). In the three stages of transaction costs in trade which involve contact, contract and control, trust is linked as an obvious problem. When establishing contact, trust works as a core in the process of finding reliable information about business opportunities, potential partners and their trustworthiness (Butter & Mosch, 2003). This phase becomes even harder if the process has an international context and the potential business partner operates in another country. Then communication, culture and distribution become an additional obstacle.

One way to reduce transaction costs is to distribute the information about the business opportunity to all the members in the business community/organization and other parties that are involved that would be interested in the information so that the parties do not have to search themselves. Another approach is that there must be a guarantee that the information is of high quality, reliable and trustworthy (ibid). The trust part is important as the transaction costs increase with the level of detail outlined in the contract. The contracts usually connect transaction costs in the negotiating terms when more details that are written down implies higher transaction costs (Butter & Mosch, 2003). Barney & Hansen (1994) confirmed this by stressing that a lower transaction cost is associated with less time spent on a detailed contract if the parties have trust in each other. As a result, both business parties do not formulate delimitations for every conceivable scenario but feel safe to adjust to changes in the market and environment.

Riordan & Williamson (1985) further argue that if there is enhanced reliability of the information, the parties tend to decrease their transaction cost. Furthermore, if the transaction is more recurrent, a standardized contract could be designed and thereby also decrease the transaction cost (ibid). Studies relating to transaction cost have faced difficulties defining and estimating these in practice. According to

Riordan & Williamson (1985), transaction costs could affect the decision concerning contract writing. The concept of trust will be discussed in more detail hereafter.

2.4 Social capital and trust

Social capital was introduced in late 1970 as a term that can be understood as a person's investment in different relationships that enhance their social resources (Barbalet, 2009). Unlike physical capital that economists can calculate such as tools, machinery and facilities, social capital is created through changes in relations among people. The correct definition of social capital has been discussed by several authors and there remains a disagreement about the relation to social capital and trust. Guiso et al. (2000) stress that one of the major authors of social capital such as Putnam (1993), Coleman (1990) and Fukuyama (1995) views trust as a form of social capital and therefore trust is defined as a form of social capital in this thesis.

Trust is a form of social resource and is generated by interactions between social actors. In almost, all human relationships trust plays a big role that permeates family relations, friendships and economic relations. As much as people rely on support from their friends and parents, so does the seller that trusts the buyers to pay the price (Fehr, 2009). La Porta et al. (1996) argue that trust or social capital determines the performance of a society. The same authors did a cross-section study of countries and the result revealed a lower inflation rate and higher GDP growth associated with trusting people. The study also showed that Scandinavian countries had the highest levels of trust in strangers (ibid.).

Cooperative is a common social collaboration between farmers to obtain a larger market position which enables greater opportunities to negotiate better prices (Hakelius & Nilsson, 2020). Cooperatives have other services to offer such as, social, cultural and educational services that may be even more valuable for the farmer than higher prices (Morfi et al., 2015). A farmer who is not a member of a cooperative usually has his network of buyers and sellers of products. There also exist associations that farmers can join to talk and discuss agriculture with other farmers. Members that join a cooperative expose themselves to risk by being dependent on other members and the leadership. Hence, the member must have trust in the cooperative. Trust generally reduces transaction costs in business relations and social life (Morfi et al., 2015). Trust between members and an organization has been shown to lower transaction costs. Members with a higher level of education have displayed a greater value to information and therefore continue to seek more information. On the contrary members with lower education levels depend on the cooperative in terms of all the decisions (ibid.).

Previous studies have revealed that social capital and trust between people are more likely to produce more efficient outcomes to avoid inefficiency traps, such as the prisoner's dilemma (La Porta et al., 1996). When consistently people participate in social activities and trust people across regions and countries, thereby promoting higher economic growth, firm growth and better functioning institutions (Guiso et al., 2000). The more people trust in each other, the more likely they trust relationships and to be more confident in dealing with others (Barbalet, 2009). There is a difference between trust which is an attribute of a relationship between exchange partners, and trustworthiness, which is an attribute of an individual exchange partner (Barney & Hansen, 1994).

Trusting someone else is risky since it means to accept the risk that the other part not keeping their part of the promise or in some way abuse the trust of the other partner. The consequences of broken promises are difficult and potentially costly, both in terms of financial investment and the feeling of vulnerability. After a broken promise, it is easy to question the value of trusting someone compared to the risk exposure. Fawcetts et al. (2012) argue that risk decreases concerning the maturity of trust. Based on the strength of trust on the other part, the less the risk.

According to Fawcett et al. (2012), a relationship capability often affects performance capability. When examining high levels of relationship commitment capability in firms it was revealed that openness to sharing information, strategic market plans and technology-commitment plans were important. They also showed that empathy and investment in the partners' capabilities were important. Firms that try to increase the trust level stress the importance of performance capability that results to "perform to sow promise". However, they do not have the willingness to commit to relational investments. There exist several levels between a low level of trust and a high level of trust. Factors such as loyalty, dedication and relational investments determine that the level of trust and relationship capability the firm achieves. Long-term success depends on the ability to deliver on a given promise, but not holding the promise lowers the trust. A high level of trust is rare since it requires high levels of both consistent performance and relationship commitment.

2.5 Design of theoretical synthesis

The authors of this study have chosen the theories of risk management, transaction cost, decision making, social capital and trust to interpret the empirical findings. These theories will help answer the research questions and are in line with the aim of the study. Each theory has been described above, and in the following sections, these theories will be linked to the empirical problem to form a basis for analyzing the data. The collected material will be analyzed based on this theoretical synthesis to be able to answer the research questions.

2.6 Theoretical synthesis

To be able to answer the research questions in this study, a theoretical synthesis of the grain marketing process that contains the chosen theories combined with the empirical problem needs to be illustrated. The theories that help answer the research questions of this study have different parts of the grain marketing process. Figure 6 below aims to illustrate the process of grain marketing in agriculture companies from a farmer's perspective. The decisive factors for choosing a grain marketing strategy are noted inside the boxes. A farmer's decision is based on both the fundamental part in the individual goals as well as influencing factors. The fundamental part can be things such as risk preferences, social interest and how to search for information. According to Hardaker et al. (2015) and Barry et al. (2004), risk preferences are affected by the experience, age, education, farm size, geographic location or other social factors. Further, according to Morfi et al. (2015) transaction costs could be reduced in business relations by the trust to the other party. A greater relationship commitment promotes better communication and a greater willingness to work together (Fawcett et al., 2012). The social capital together with theories about trust and transaction cost, therefore, create a deeper understanding of the phenomena of how farmers' decisions about selling grain before, or after the harvest are conducted. The theories that are connected to each part of the process, display which theory plays the most central role.

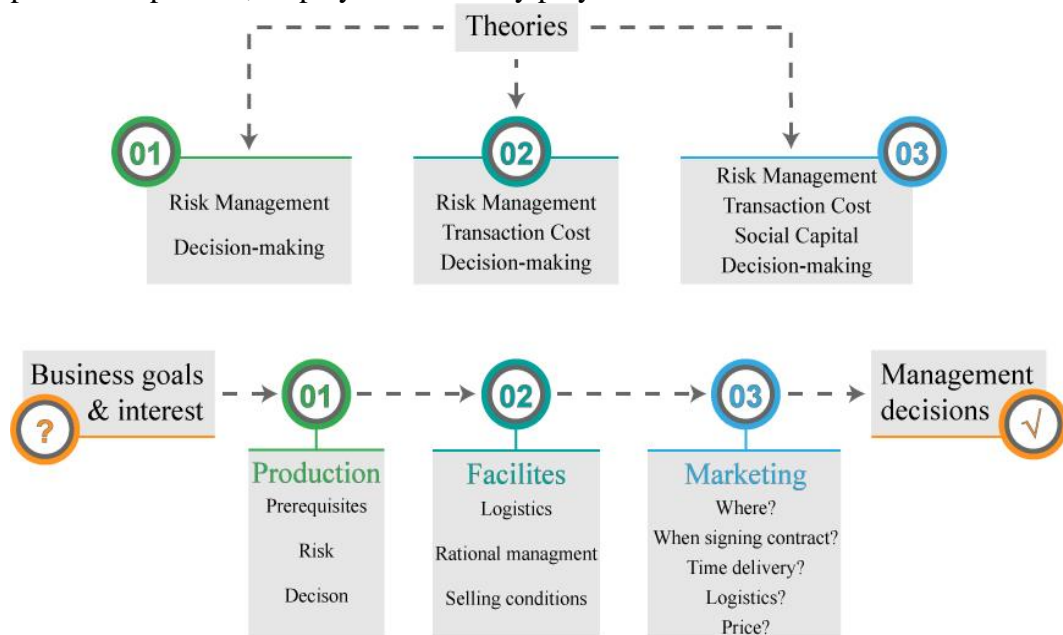


Figure 4. Decisive factors depending on stage influencing farmers' decisions. Own processing.

Business goals & interest

Depending on the goal of the business and how satisfied the farmer is with the level of goal satisfaction, it plays a role in how and what the company chooses to produce. According to several authors, (Willock et al., 1999; Vancouverlay, 2004; Pannell et

al., 2006; Grubbström et al., 2014; Howley et al., 2015), it has shown in earlier studies that farmers' decision not always is rational but are affected by the diversity of goals, values, beliefs and attitudes. This is the first step in this theoretical synthesis including both the goal and the farmer's interest. This implies that production, facilities and the choice of marketing strategy are also influenced by the farmer's goals in terms of the company, as well as the personal interests of the farmer.

Production

The main enterprise of the firms interviewed in this study is grain and oilseed producers. The decisive factors for the choice of enterprises depend on risk attitudes, prerequisites due to the farm and available buyers and interest.

Facilities

The facilities available at the farm are a factor that affected the marketing strategy. Pingali et al. (2005) argued that small-scale farmers face difficulties entering new markets then they lack available storage spaces to lower the transaction costs. Facilities are the foundation of how the farmer can plan the market strategy. If the farmer does not own or have the possibility to store any grain from the harvest, then it impacts the number of markets chooses and the selling conditions.

Marketing

The marketing strategy is dependent on the goals, interests, production, facilities, risk-attitude and market events. But when it is time to decide a market strategy it is important to solve the logistics of delivery, storage and payment.

Management decisions

Based on the market conditions such as available buyers, transport, opportunities to dry the harvest and storage, shapes the options that become available marketing strategies for the farmer to choose from. Together with the level of risk attitude, market conditions and available options for delivery logistics, the decision concerning price fluctuation management are done.

2.7 Choice of theories

Wilhelmsson (2010) noted that there is a gap in the literature to examine farmers' preferences and behavior to be able to develop risk management tools customized for Swedish agriculture. Other gaps in the literature are however concerned with the social capital of a farmer and transaction cost regarding the choice of marketing strategy, and how these could influence farmer's decision. Uzzi (1997) emphasizes this in his article *"The notion that economic action is embedded in social structure has revived debates about the positive and negative effects of social relations on*

economic behavior. While most organization theorists hold that social structure plays a significant role in economic behavior, many economic theorists maintain that social relations minimally affect economic transacting or create inefficiencies by shielding the transaction from the market (Peterson and Rajan, 1994). These conflicting views indicate a need for more research on how social structure facilitates or derails economic action.” (Uzzi, 1997, p.35) Social capital may play different roles in the different strategies since the relationship and trust to the buyer differ in different strategies. Furthermore, multiply authors have noticed that cost and profit is not the only thing that matters in decision-making (Boehlje & Trede, 1977; Simmons, 2002; Pannell et al., 2006). The theory of social capital was therefore deemed a good choice to highlight factors such as attitudes and trust. To further fill the gap in the literature about this issue, the focus of this study is to examine differences and similarities regarding the fundamental theories of social capital and transaction cost between Swedish farmers. By further examining what factors influence their decision-making about marketing strategies, this thesis may help in the attempts to gain a deeper understanding of farmers’ managerial process.

2.7.1 Alternative theories

As this study’s focus looks at fluctuating prices in the grain market, other theories such as optimization and microeconomic theory could be alternatives when choosing the optimal strategy for a farmer and their preferences. Furthermore, as the essay aims to examine farmers' decision-making that is affected by social capital and transaction cost, other theories such as agency theory could be an alternative theory for social capital if a similar study was conducted.

3. Methodology

The following chapter describes the methodology of the thesis and which method process was used. This is followed by a discussion about suitable research methods for this type of investigation, how data was collected and analyzed. It concludes with the ethical considerations and quality assurance of the essay.

3.1 Research philosophy

Truth and knowledge are viewed from different perspectives by all researchers (Bryman & Bell, 2015). During the research process, these perspectives influence the process since the world around, beliefs and assumptions differ for every person. These assumptions and directions of thinking are, by Bogdan & Biklen (1998), described as the researchers' paradigm. The orient thinking is affected by logically formulated assumptions, propositions or concepts (Bogdan & Biklen, 1998). To collect a wider understanding of the methodology in this study, a closer examination of epistemology and ontology will be supporting the underlying paradigm of the researchers' (Bryman & Bell, 2015).

The ontological considerations are concerned by the social entities of a research process (Bryman & Bell, 2015). How the study is carried out as well as how the research questions are formulated are described as ontology by Bryman & Bell (2015). However, ontology is concerned by the central questions of objectivism or constructionism. The position of the ontological phenomenon objectivism asserts that the meaning of social context exists independently of social actors. Further, constructionism asserts that multiple realities exist and social phenomenon without interrupting is affected by social actors (Bryman & Bell, 2015).

The chosen ontological position in this study was made to note if there are any differences between social contexts and social actors. The authors of this study need to catch specific social phenomenon contexts, which are unique and different in every coherence (Bryman & Bell, 2015). The position of this study, therefore, suits a perspective of constructionism, since its advantageous when addressing how social phenomena affect farmers' decision-process for grain marketing. Within the constructionism position of ontology, the considerations of social reality and the individual's environment are changing constantly (Bryman & Bell, 2015).

The epistemology considerations of a study are described by Bryman & Bell (2015) as the view of acceptable knowledge. Context-dependent and specific situation ideas or more generalized and universal ideas are traditionally the divisions of

knowledge (Morgan, 2007). However, according to Bryman & Bell (2015), epistemology mainly addresses questions regarding if the social world and natural science should be examined with the same principles. Social reality is hard to consider objective since perceptions of the reality differ between people (Jacobsen, 2002). The concepts of social and natural science were in this study interpreted as diverse concepts, which according to Bryman & Bell (2015) generate knowledge by different requirements. Therefore, the suitable approach of epistemology in this study is associated with interpretations and understanding the construction of the social reality of the respondents, which is interpretivism (ibid).

3.2 Methodological approach

Traditionally there are two main research approaches in business research, qualitative and quantitative (Bryman & Bell, 2015; Robson, 2011). Regarding how the data collection is planned, the two methodological approaches could, according to Robson (2011) be described as flexible or fixed designs. To fulfill the aim of this study is to answer the research questions, it is important to use a research approach that allows it to come closer to the individuals to receive a deeper understanding of their perspectives and contexts. This study will use a more flexible methodological approach, which will be based on a qualitative approach but also some quantitative parts (Bryman & Bell, 2015). The research aimed at understanding social contexts and methods that generate words rather than figures for data analysis is characterized as qualitative studies, according to Bryman & Bell (2015) and Golafshani (2003). Furthermore, it is beneficial when attempting to gain an understanding of a phenomenon and empirical data in specific issues, like in this type of research (Robson, 2011). According to Trost (2011), qualitative approaches are more suitable if the study aims to understand the human way to make decisions, react or distinguish and discern varying patterns of action. However, quantitative methods are beneficial to gain data on yield objective, observable, reliable, numerical facts about particular, operationally defined components of social reality (Allen-Meares & Lane, 1990). An approach that combines the two is called a mixed-method (Sandelowski et.al., 2006). This study will use the mixed-method approach in a limited way, with the use of complementary questionnaires before interviews and statement questions based on the Likert scale. Apart from this, the study is based heavily on a qualitative research design. The mixed-method can provide a depth and breadth that just one method can lack by just looking at the problem from one approach (Heigham & Croker, 2009). By mixing quantitative and qualitative data collection it gives the author to understand the research more completely.

3.3 Formulating the theoretical synthesis

In academic business research, the methodological approaches of study design differ mainly between deduction, induction and abduction (Bryman & Bell, 2015). The deduction is beneficial when the researcher aims to generate hypotheses about already existing theories, which are empirically tested. In studies based on the deduction approach, the main goal is therefore to test existing theories based on processed knowledge (ibid). According to Bryman & Bell (2015), the weakness with developing a mindset based on deductive reasoning is that it is stricter with the theoretical logic and it is not clear how to choose the theory that needs to be tested. However, inductive reasoning intends to conclude observations in the field of a phenomenon where the existing knowledge is limited, to create new theories. The theories that are developed are later compared with already existing theories of the phenomena, which is advantageous since the approach allows the researchers to generalize a collection of extensive empirical material (Bryman & Bell, 2015).

To further get a deeper understanding of thoughts and feelings about price fluctuation and to explore decision-making perspectives for farmers, an inductive process will be used. The qualitative approach, with an inductive process, enables understanding of the specific phenomena like in this case (Robson, 2011; Bryman & Bell, 2015). An inductive approach is needed because if new foundations and information are created during the research, the interview questions can be revised (Bryman & Bell, 2015). To find suitable and relevant theories, the inductive approach allows the authors to collect empirical data in a substantial amount to be interpreted and divided into different patterns. The inductive approach of a qualitative study is defined by its flexible way of working since it can easily be revised afterward if new findings occur (ibid). However, the study should still be based on the theoretical framework. Bryman & Bell (2015) further describe the qualitative method as advantageous when the researchers want to find underlying reasons and to obtain a deeper understanding of the aim and the respondents for the study, as well as opinions, motivations and attitudes. The results of the study will be built on the researchers' understanding of what is important in farmers' context, and therefore the study is to focus on words, context, and what is meaningful to the respondents, which will form the unit of analysis.

However, the weakness with the inductive approach is explained as the difficulty to enable theory-building with the empirical data. Therefore, the abductive approach is also used to overcome these limitations. The study, given an abductive approach, may overcome the limitations between inductive and deductive approaches, as the abductive reasoning enables eventual theory-building while still allowing for an inductive process (Bryman & Bell, 2015). Furthermore, involve the social world as one of the empirical references for the theoretical framework (ibid).

The abductive approach allows the researchers to revise theories during the work. With an abductive approach, the risk of missing different interpretations is reduced when the researchers are alternating between theory, empiricism, and analysis (Alvesson & Sköldberg, 2008; Yin, 2013). An abductive approach opens up several sources of data, which enables triangulation and increases the credibility of the study, to capture different interpretations and perspectives. The abductive mindset helps the researchers to overcome these restrictions by starting with finding a problem, that further attempts to be explained by relevant theories. For example, phenomena that could not be described exactly by already existing theories (Bryman & Bell, 2015). This involves the social world as a source for the empirics and theoretical ideas (Atkinson et al., 2003; Schwartz-Sea & Yanow, 2012). What the researchers know about the theoretical considerations within the subject is further drawn as a hypothesis that must be subjected to empirical examination (Bryman & Bell, 2015). Together with the theories, an abductive approach is used with the theories to provide logical inferences about the problem.

3.4 Research design

The study aims to understand farmers' behaviors and decision-making when choosing risk management strategies, including financial trading on the futures market, an interview-based study was deemed useful. Kvale and Brinkmann (2014) state that interviews are beneficial in such an endeavor as interviews enable respondents to express themselves with their own words, which is necessary to learn about behavior (Kvale & Brinkmann, 2014).

The study was designed as a multiple case study, which is suitable when trying to explore a single phenomenon in-depth from many angles in a real-life context (Yin, 1981). It allows for the use of different ways of data collection to acquire well-rounded information (Yin, 2013). A case is different in all situations, in medical research a case is often a patient and in business studies, it is often a workplace (Cousin, 2006). This study is a case of a farmer that owns or works at an agriculture business.

A single-case design can be used to test theories, for example, if a company implements a quality system a case study of the company investigates how the implementation has affected the company. With a multiple-case design, a conclusion is drawn from a group of cases (Yin, 1983). Multiple-case studies are considered appropriate when a phenomenon seems to exist in a variety of situations. When using a multiple-case design each case still must investigate thoroughly, but the collected cases aim to be the foundation for replicating or confirming the results (ibid). This thesis has two case groups that have the context of farmers with different marketing strategies for how they sell their grain. The difference between

the two groups is that one group are several marketing strategies including using futures contracts, while the other group is using several marketing strategies but not futures contracts. The authors wanted to investigate these two groups to see if there are any differences in social life, risk attitude, decision-making and transaction costs.

The study also uses a preparatory questionnaire before interviews to gain knowledge about the marketing strategies that the farmers used the previous year. This focused on the harvest from 2019, which enabled the respondents more time to figure out how they did that year, before the interview. This questionnaire also aimed to save time during the interview and therefore allow the interview to focus on the respondent's thoughts, context, reasoning and thereby their marketing strategy.

3.5 Literature review

Databases used to find relevant theories and previous studies in the field of this thesis title and provide a theoretical framework, includes Google Scholar, Web-of-Science, Primo and SAGE Publications. These include studies within business management and economics. To expand the knowledge of the theories, as well the fundamental concepts of financial trading, a narrative literature review of peer-reviewed articles, articles and books was conducted. The narrative review tends according to Bryman & Bell (2015) to be less focused, and instead more wide-ranging. A narrative review is further focused on critical reflection and deep understandings to find gaps in existing knowledge (Allen, 2017). Moreover, the search of words was such as an optimal hedge, hedging, grain marketing, risk management, agriculture risk management, agriculture decision-making, farmers' social capital.

3.6 Sample and delimitation

The study included a total of 12 respondents divided into two groups. Six of them are using futures contracts in their business, referred to as group 1, and the remaining six companies are not using futures contracts, referred to as group 2. The selection of farms was based on the method called purposive sampling. Purposive sampling means that the researcher chooses participants based on his or her judgment to best answer the study's research questions. The number of respondents is sufficient for generating a result that is nuanced in an empirical, qualitative study, according to Guest et al. (2016). They stress that theoretical saturation occurs after the first twelve interviews (Guest et al., 2016). This means is that no further interviews are expected to generate new results after this point (ibid). The purpose of the study is to create understanding and describe it, and not to generalize findings.

The result would thereby not necessarily benefit from additional respondents (Bryman, 2008; Trost, 2011). This was further confirmed during the interviews since during the two last interviews no new information arose.

The two comparative groups of agricultural businesses operate under similar circumstances, given geographical location and the area of arable land. The arable land is, however not always the same, since it is hard to find two companies with complete similarities. The most important criteria were that the companies had more than 50% of their turnover from crop production, especially wheat and oilseeds producers. In other words, the main enterprise should be crop production. Companies with other enterprises such as livestock or other enterprises have been excluded because risk management in those cases may differ from the reasoning examined in this study. The preferences and behavior concerning grain marketing and risk management of fluctuating market prices may differ, but their base situation should be comparable, to be in line with the purpose of this study. Through this approach, multiple-cases, the aim is to minimize the risk of observing results only as general trends with futures contracts, and instead create an understanding of how similar farmers deal with the same problem in different manners.

The selected cases that were chosen in the counties of Skåne, Mälardalen, Värmland, Stockholm, and Sörmland (see figure 5). The companies were found through Handelsbanken who provided information and suggested the authors of this study with suitable farms. The counties were chosen partly due to the willingness to participate in the study, but also to satisfy the conditions of at least 350 hectares of arable land. This limit was defined to ensure that the farmers needed at least one full-time position within their company. Respondents were contacted first by the responsible individual at the bank and thereafter contacted by telephone by the authors of this study.

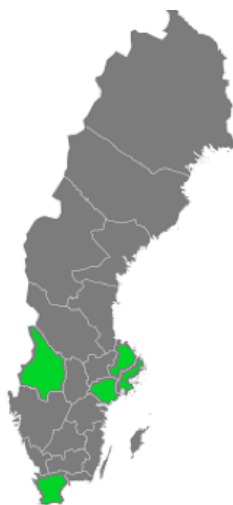


Figure 5. Map of Sweden, selected counties in green. Own processing.

3.7 Semi-structured interviews

Because of the conditions for this study according to Covid-19, telephone interviews were conducted. Interviews in the qualitative approach of a study by telephone are often being discussed, because of the lack of visual contact and personal contact (Bryman & Bell, 2015; Vogl, 2013). Further, Novick (2007) argues that interviews by telephone may lead to loss of non-verbal data as well as contextual data. In qualitative studies, non-verbal data and contextual data are helpful to improve the interpretation, even though some studies have shown that non-verbal data may easily be misinterpreted (Sturges & Hanrahan, 2004). However, telephone interviews have the benefits of being more cost-efficient and time-efficient, according to Vogl (2013) and Bryman & Bell (2015). Previous studies indicate thus also that there are no big differences between face-to-face interviews and interviews by telephone (Sturges & Hanrahan, 2004; Vogl, 2013). Enabling interviews of respondents in a larger geographical area is another advantage of using telephone interviews, according to Sturges & Hanrahan (2004). Furthermore, Bryman & Bell (2015) argue that discussing sensitive questions in telephone interviews might lead to the respondents feel less distressed since the researchers are not physically present. Vogl (2013) also argues that it is easier to terminate a phone call rather than to end a physical visit to someone's home, which might lead to increased control of the communication process in a telephone interview.

To examine how the respondents in this study manage price fluctuations and what further affects their decision, as well as how they consider different types of marketing methods for the physical product. This master thesis uses semi-structured interviews to further develop our understanding. Semi-structured interviews are according to Lewis-Beck et al., (2004) and Bryman & Bell, (2015) a method that could be defined as a more flexible and fluid form of an interview where an interview guide (see Appendix 1) is prepared before the interview. An interview guide aims to guide the researcher through the interview and enables being flexible about the questions depending on the respondent's answer. The purpose of the interviews is to get acquainted with the respondents' social reality and try to explain the consequences of selected theories. Based on interviews and observations, an empirically based theory about grain selling strategies with both physical and financial price hedging is developed.

Furthermore, a crucial factor for the interviews was the interview technique skills of the researchers. To avoid influencing the respondent's answers and avoid asking leading questions, open-ended questions were used. The interview guide was tested with help from two other farms, one of them using futures contracts and the other reference farm which did not use financial futures contracts. The test interviews

were conducted by phone as well and are not included in the empirics of the thesis, since the questions were changed depending on how they were received and if the answers could be used as a result. During the interviews, one of the researchers was asking questions and the other taking notes. In general, all the interviews were made in a relaxed conversation, initiated with discussions about farming businesses which is not included in the main interview guide, to access a more relaxed interview. The interviews were all made by telephone. First, the farmers of the study were contacted where they were briefly informed about the purpose of the essay and asked if they would like to be a part of it. The farmers were informed about how long an interview was expected to take and then an appointment where booked. After the first phone call, the farmers received a link with preparatory questions for the interview via e-mail (see Appendix 1). The dates were booked one week after the preparatory questions were received to ensure they had plenty of time for answering these. The interviews took an average of 1,5 hours per occasion. The interview guide included some background questions about the agent as well as the business, to bring a basis for analyzing the remaining interview questions.

To catch empirical value judgments in the interviews, some questions external to the semi-structured interviews using numerical observations were used with statements. These statements were asked to the respondents and could be answered by 1 – 5, depending on how much the farmers agreed to the statement. These questions were made to catch both value judgments with the semi-structured interviews, as well test them with numerical observations. This method is according to Morse (1991) labelled methodological triangulation since both qualitative and quantitative measures can be useful if only one method is inadequate.

3.8 Coding and analysis of the data

This study has been made with a combination of statement questions, i.e. closed questions with a Likert-scale to investigate how the respondents considering themselves according to the statement (Bryman & Bell, 2015). However, most of the questions were open questions, i.e. semi-structured. The semi-structured interviews used in this study provided a lot of information in a short time, which requires efficient methods for coding and structuring the information before the analysis is conducted. In qualitative studies, analysing the sampled data is an important part of the study (Robson, 2011; Bryman & Bell, 2015). According to Bryman & Bell (2015) and Robson (2011), it is difficult since there are not many accepted methods for analyses. However, the interviews conducted in this study were all recorded after approval from the farmers. During the interview, one of the authors was asking questions and the other taking notes. As well, during the interview, it is needed to confirm the respondent's replies to avoid misconception and ensure the respondent's context is interpreted correctly. After the interview, the

recording was used to transcribe and structure all the noted details during the interview with the support of an excel sheet. After this was made, respondent validation where made, which is written more about below 3.9.

The collected data from the semi-structured interviews were sorted into an Excel-sheet to manage every farmers' answers. Since the interviews also included open-ended questions, yielding a large variety of answers and topics, the authors categorized the answers to make the information more manageable to interpret based on the theoretical synthesis. How the data has been interpreted and perceived can be seen as a part of the analysis (Bryman & Bell, 2015).

The sampled data in this thesis was analyzed by the method called thematic analysis. To structure a large amount of information manageable and to find patterns, it is necessary to reduce the data and structure it into keywords to find relevant information useful for the result (Bryman & Bell, 2015). Further, since most of the questions are open questions, the need for rereading the answers and formulate different themes in the replies are clear (ibid). Therefore, a coding frame has been designed to structure themes and their answers associated with each theme, i.e. their respectively code. This was made to divide the categories and themes depending on which theory they were built on. See further *Appendix 3* and *Appendix 4* for clarification and example. Thematic coding is an advantageous method that is suitable in studies like this due to the large amount of collected data (Robson, 2011). After the interviews were conducted, they were compiled and structured. Afterward, the authors were able to distinguish different expressions and answers to the questions that were linked to the different themes that existed, to find keywords. Further, the risk management answers could be connected to the literature to find out the risk management strategies and respondent's risk attitudes according to Pindyck & Rubinfeld (2005) and Hardaker et al. (2015).

3.8.1 Chi-Square test

To improve the clarity of the findings in the study design and examine if there are any differences between the two groups in a statistical manner, the statement questions need to be tested (Bryman & Bell, 2015). With a chi-square test, the quantitative data from the survey statements are being tested, to find out whether there are statistically significant differences between the distribution of answers (Wahlin, 2011). In the procedure of implementing a chi-square test, a null-hypothesis that indicates that there is not a different relationship in the frequency between the groups, are defined (Wahlin, 2011). This also implies that the population is evenly distributed between the variables. However, in this situation, the variables are sorted in a "low" or "high" frequency. Since the questionnaire is

sorted in a Likert-scale from 1-5, the answers in the “low” frequency are answers from 3 and below. Answers higher than 3 are sorted as “high” frequency.

Further, the null-hypothesis assumes that every 12 participating farmers answer the same to every statement question. By first calculating how many of the total participating farmers answered, either “high” or “low” frequency, the percentage amount of answers divided in each group could be counted. Afterward, the observed answers are compared with the expected value, and the chi-square test could either reject or not reject the hypothesis. Rejection implies that the hypothesis is not correct, and thereby it exists a relation between the variables and the group. This implies a statistically significant result (Wahlin, 2011). The calculation that is being calculated in this section is called a p-value (Wahlin, 2011). The p-value tells us how big the chances are for getting a significant result, and the p-value needs to be less or equal to the significance level of 5% to ensure a significant result (ibid). This could for example be to investigate whether farmers that are not using futures contract more likely tend to sell their harvest to the same buyer the last five years. If so, this could with a chi-square test reveal a statistical difference between the non-future user and the future user and show if it is a pattern for non-futures users or a coincidence. However, the chi-square test does not answer the question of what the difference is, but together with the semi-structured interviews the study aims to combine these two perspectives to conduct a well-analyzed answer. The chi-square procedure is further presented in Appendix 2.

3.8.2 Type I and type II error

According to Bryman & Bell (2015) and Wahlin (2011), there is also a risk due to the performance of a chi-square test. These are divided into two “errors” which according to Wahlin (2011) could be type 1 or type 2. The first type of error is when rejecting the hypothesis even though it is true, and the type 2 error is the opposite, not rejecting the hypothesis even though it should be rejected. By reducing the significance level, the risk of type 1 error is reduced, which is why this study chose a significance level of 5%. By having a significance level of 5 % there is further also a 5% risk that the test shows a relation between the variables even though no one exists. However, it is necessary to be aware of this problem but since it is a relatively small population of respondents in this study, the risk of type 2 errors is reduced.

3.9 Ethical considerations and respondent validation

The information from respondents is considered sensitive data and must be treated as such. All the data collected from the respondents are anonymous and no questions will be designed to make it possible to figure out individuals based on

their answers. Ensuring that all the participants get information about the study and how the data will be handled, the responders were all informed early in the process that they will be anonymous. Further, the authors informed about respondent validation. This is included to ensure that the respondents have the opportunity to read and accept the result of the study before it is published. This procedure minimizes the risk that respondents feel unsafe to participate, as well as ensuring that the observed results from the interviews are correct and congruent (Bryman & Bell, 2015).

3.9.1 Dropout analysis

Due to missing data, twelve out of sixteen respondents were available for interview. However, the respondents were evenly distributed between the groups, with six companies in each group. This implies a 75% participation rate of the study, and according to Bryman & Bell (2015), this is good enough. Arguably, the implications for twelve instead of sixteen respondents should be small, since Guest et al. (2016) stress that a saturated result is achieved after the twelfth interview. However, the respondents were distributed 50/50 in each group which made comparison even. Every participating farmer that use futures contracts, could thereby be compared with a respondent that does not use financial futures contract.

3.9.2 Method discussion

This study could have utilized a statistical survey method based on what farmers do objectively. This could have developed a statistical tool to find quantitatively statistically significant similarities or differences between, for example, regions or arable land. In this way, a survey could have been appropriate for collecting data. However, criticism towards the chosen qualitative methodology argues that it is too subjective and that the arguments are based on subjective assumptions of the researchers (Bryman & Bell, 2015). Furthermore, critics also argue that the qualitative research method is hard to replicate (ibid). However, the quantitative method would not answer the underlying factors and points of view for the participants, which is the aim of this study (Bryman & Bell, 2015). Further, given the continuous change of social reality and environment for the individual, makes it hard to replicate studies that focus on underlying values. For this reason, the researchers of the study have chosen a qualitative method, based on semi-structured interviews, to obtain a subjective individual view of the problem faced by the chosen respondents (Bryman & Bell, 2015). Further, a multiple case study with semi-structured interviews is advantageous since it enables us to obtain an understanding of underlying factors (ibid).

4. Empirics

The fourth chapter includes a brief description and statistics about the respondents interviewed in the study, divided into each group. Thereafter the results of the research questions for each group are presented. The result has been categorized based on the theoretical synthesis.

4.1 Empirical background

Farmers that lack a storage facility have to deliver their grain at the same moment that it is being harvested. The result is that the supply suddenly increases, and then the demand and price will decrease. However, farmers who can store their grain, have several marketing options and can choose when the goods leave the farm. In most years, by delivering the grain later in the year when supply has decreased and the demand is higher, the farmer may significantly enhance their profits compared to delivered grain at the harvest. In the latest decade, it has also been possible to trade financial contracts that do not require a physical delivery in Sweden, only to buy and sell contracts for a given price and grain volume. Different marketing strategies have shown different price developments and the question is then what strategies the farmers use and why, but also which factors affect their decision?

4.2 Background description of the case companies

Table 2 below displays an overview of selected data about each farm that participated in the study. The data includes a presentation of the farm's tillable land, full-time employees that work with agriculture throughout the entire year and a normal hectare yield from the grain production. The table also shows how many tons can be stored in the farm's facilities.

Since one group trades financial futures, one variable shows how long they have been trading futures and as well where the farm is located in Sweden. The chosen responders have either been the farm manager or someone that holds a similar position in the company. Farmers that trade with futures contracts, group 1, are marked as 1-6. The remaining farms 7-12, are group 2 and do not use futures contracts. Both groups aim to have similar hectares in the same regions to give similar conditions for a fairer analysis reference.

Table 2. Briefly description of case companies. Own processing

Farm	Hectares	Employees	Production (in tons)	Storage (in tons)	Futures users since	Location in Sweden
<i>1</i>	950	4	~5750	~4000	Four years	South

2	1100	4	~6500	~5500	Eight years	South
3	620	2	~5000	~4200	Ten years	Middle
4	1000	3	~5000	~5000	Six years	Middle
5	1100	4	~6000	~3500	Four years	Middle
6	480	4	~2600	0	Two years	Middle
7	1300	5	~8500	~10 000	-	South
8	440	2	~2700	~3500	-	South
9	675	2	~4000	~4000	-	Middle
10	535	1	~1700	~1600	-	Middle
11	385	2	~2000	~2000	-	Middle
12	700	1	~3000	~2000	-	Middle

4.3 Group one

In the following part of the empirical chapter, the findings based on the interviews with the agricultural companies that trade futures contracts, defined as group one, are presented.

4.3.1 Marketing strategies

The results in the table below display empirics from interviews of group 1, which is six out of 12 responders, that use futures contracts. The results are based partly on how the previous year, that of 2019, was managed but also based on how the farmer usually defines the marketing strategy.

Table 3. Farmers' sales strategies. Futures users, group 1. Own illustration.

Risk	Farm	Spot- year	Spot- harvest	Storage agreement	Pool	Futures	Forward	Strategy (1-5)
Averse	1	XX	X			XXX	XXX	5
Taker	2		X		XX	XXX	XXX	1
Averse	3	XX				XX	XXX	1
Neutral	4	XX	X			XXX	XXX	5
Averse	5		X	XX	XX	XX		2
Neutral	6		XXX			XXX	XXX	5

In table 3, indicates how much each strategy is used by the farmer. If there is an empty cell, the strategy is usually not used or not used at all. Further, X means the strategy is used very little, XX means that it is used to some extent and XXX implies that it is the main strategy. For example, if a farmer with 1000 tons of wheat sells 500 tons through forward contracts it counts as that it is the main strategy and will be referred to as XXX in the table. If the same farmer sells 100 tones in the pool, it is used very little and will be referred to as X in the table. If the farmer then sells

the remaining 400 tones at spot price, it is used to some extent and will be referred to as XX in the table.

Since *Futures* is not a physical contract form, the responders have defined at least two main strategies. *Risk* refers to the farmers' view of themselves in terms of risk preference when making decisions in the company. *Farm* is the number identifying the respondents in group one. The *Spot - year* is described by the farmers as a stored harvest that is not contracted in advance but sold during the year. *Storage agreement* forces a farmer to sell to the contracting company that offers the storage agreement. *Spot-harvest* is an uncontracted form but it is sold during harvest either undried or dried. *Pool price* is grain sold in advance, contracted with a pool agreement. *Futures* is a shorter definition of futures contracts, which are standardized contracts traded at the futures market. *Forward* is a fixed price agreement where the physical goods are required to be delivered. *Strategy* refers to meaning how much the farmer has a deliberate strategy that they follow every year. This question was asked within the perception of 1- 5. 1 = *almost never*, 5 = *almost always* (See appendix 1, Interview guide).

4.3.2 Thematic concepts regarding marketing strategies

To identify, analyze and assess the intentions and practices that Hardaker et al. (2015) stress within risk management, the answers collected regarding the reasons for why each marketing method that farmers use are hereafter presented. The procedure of defining risk management according to Hardaker et al. (2015) is by identifying, assessing and monitoring risks and uncertainties. This procedure has been applied to find similarities and differences, as well as patterns regarding farmers' management of grain sales. How the defining words have been used and coded are shown in Appendix 3.

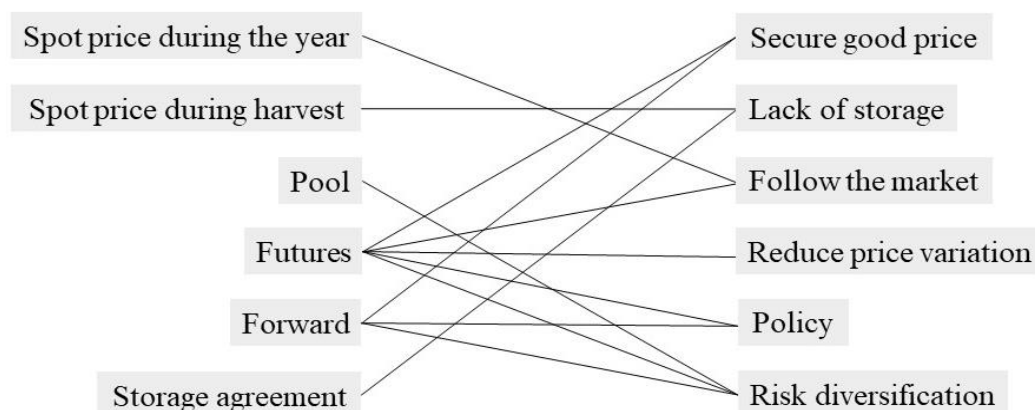


Figure 6. Thematic concepts to use different sales methods by futures users, group 1. Own illustration.

Figure 6 shows the thematic coding of why futures users, farmers in group one, choose their different marketing strategies. Futures are motivated by many aspects, such as to secure a good price, - and/or to be able to follow a more specific market that provides exact price quotes every day. To further be able to reduce price variation, following a policy, such as risk diversification are some additional aspects that the responders answered. Using forward and pool are also seen as options for risk diversification. However, aiming to secure a good price was only quoted as futures and forward options. Due to the lack of storage, some farmers have to sign a storage agreement or sell grain at a spot price during harvest. Farmers who choose to hedge in a “traditional way” developed a connection between spot price during the year and futures price quotes because they need to follow both markets.

In the case where traditional hedging is used, the physical commodity is sold at a spot price during the year to follow the current price. To some extent, spot price information is used during the year without interacting with futures contracts to be sold when the price is right. However, a positive relationship is revealed between sales at spot prices during the year and risk seekers. Pool prices are used by futures users to a relatively limited extent. They consider themselves to have better tools for risk management through the use of futures contracts. Thereby, to reduce price variation, most interviewed futures contract users do not use pool agreements. However, pool agreements can be used for the actual purpose of distributing the price risk, although this was revealed only to a small extent.

4.4 Group two

In the following part, findings from the agricultural companies that do not trade in futures contracts, defined as group two and the reference companies, are presented.

4.4.1 Marketing strategies

Following marketing empirics in table 4 describes how farmers in group two, non-futures users, answered the questions concerning how they sell their products, marked by X in the table. During the interview, every respondent was asked how they usually sell their harvest, with the year of 2019 as reference. In this group, forward contracts dominate. See the previous section for a description.

Table 4. Farmers' sales strategies. Non-futures, group 2. Own illustration.

Farm	Hectares	Employees	Production (in tons)	Storage (in tons)	Futures users since	Location in Sweden
1	950	4	~5750	~4000	Four years	South
2	1100	4	~6500	~5500	Eight years	South
3	620	2	~5000	~4200	Ten years	Middle

4	1000	3	~5000	~5000	Six years	Middle
5	1100	4	~6000	~3500	Four years	Middle
6	480	4	~2600	0	Two years	Middle
7	1300	5	~8500	~10 000	-	South
8	440	2	~2700	~3500	-	South
9	675	2	~4000	~4000	-	Middle
10	535	1	~1700	~1600	-	Middle
11	385	2	~2000	~2000	-	Middle
12	700	1	~3000	~2000	-	Middle

4.4.2 Thematic concepts regarding marketing strategies

To obtain a clear overview of how farmers act and why farmers use the various risk management strategies, the authors created thematic coding to link reasons to different marketing strategies experienced by the non-futures users (see figure 7). The procedure for risk management according to Hardaker et al. (2015) is by identifying, assessing and monitoring risks and uncertainties. This procedure has been conducted to find similarities and differences, as well patterns regarding farmers' management of these procedures.

Non-futures users tend to follow the market to a greater extent by using the information from the spot price during the year and storage agreements. Furthermore, storage agreements or selling at spot price during harvest are used due to a lack of storage on the farm. The use of pool agreements is slightly higher by non-futures users compared to the future users. They aim to achieve a good average price. Furthermore, an argument for the use of pool price is promoted as a way to distribute risk in grain sales. However, the pool price tool is not the most widely used sales method in any of the groups. Most farmers tend to consider themselves to be able to secure better prices on their own without pool agreements, which is a reason why farmers do not use this agreement to a greater extent. See Appendix 3 for detailed coding.

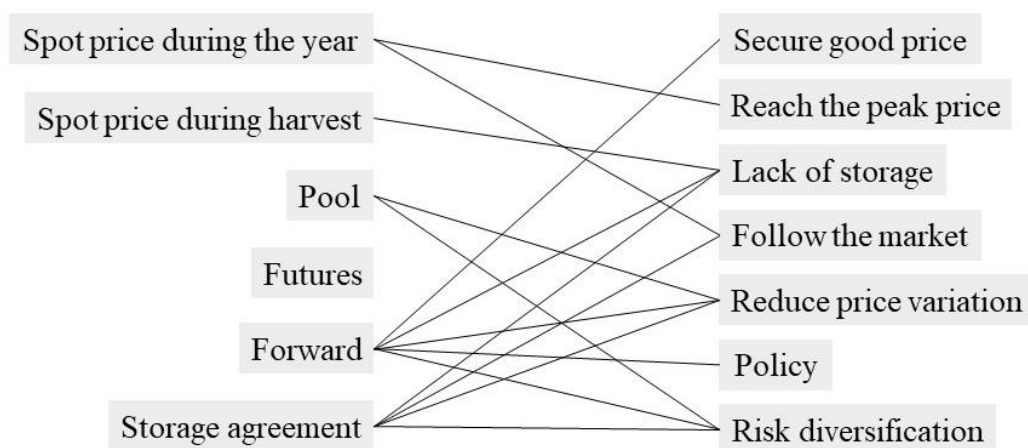


Figure 7. Motivation words to use different sales methods by non-futures users, group 2. Own illustration.

Non-futures users seem to substitute the use of futures contracts primarily through forward contracts. When it comes to farmers having a "policy" for how they implement the marketing strategy over the years, non-futures users tend to use forward contracts to the same extent every year given that it is their defined strategy. However, the time of contract signing is usually based on the price offered, - and if the price feels right, the probability of signing increases. However, this is provided that the farmer is sure that the crop survives the winter. For this reason, forward contracts are less useful for oilseeds since oilseeds sometimes do not survive the winter. Besides, farmers continue to find that oilseeds are more difficult to store than wheat.

4.5 General results from both groups

Based on the interview with the futures users, there is a general perception that farmers who have a lot of experience are more intuitive in their decision-making. The "traditional" hedging approach implies buying back the futures contract in connection to when the physical good is sold (Andersson & Lidfeldt, 1994). Although, - not all of the futures users are applying the traditional approach. The approach seems to be related to the farmer's attitude to risk. However, no farmer said that they secure their grain price twice, as by using futures and forward contracts simultaneously since it would be speculation instead of traditional hedging. All futures users also agreed that they do not usually hedge more than 50% of the expected volume in futures based on total expected harvest volume.

Every farmer interviewed in this study revealed that storage potential and the availability of dry grain had a substantial impact on their marketing strategy. However, some farmers could not store the entire harvest, which implied delivery during harvest. Furthermore, most farmers who grow oilseed agree that they want to sell the crop as soon as possible after harvest because it is difficult to store. The oilseed is a crop that is characterized by substantial uncertainty, both in terms of price and quantity, close to harvest. Hence, oilseeds are difficult to hedge since the volumes may vary a lot. Due to the storage problem, only a few of the futures users' contract oilseeds in the futures market. Further, every participating farmer agrees that selling at spot prices during harvest is something to avoid as much as possible due to lower prices. One farmer, however, argued that using spot price during harvest does not always result in bad prices, which the harvest in 2018 reveals.

4.5.1 Farmers goals

To be able to further understand the strategy of each farm operator, the underlying goals need to be understood. By questioning each farmer concerning their goals for the agricultural firm, both long-term and short-term, yielded more insight into how the farmer is reasoning.

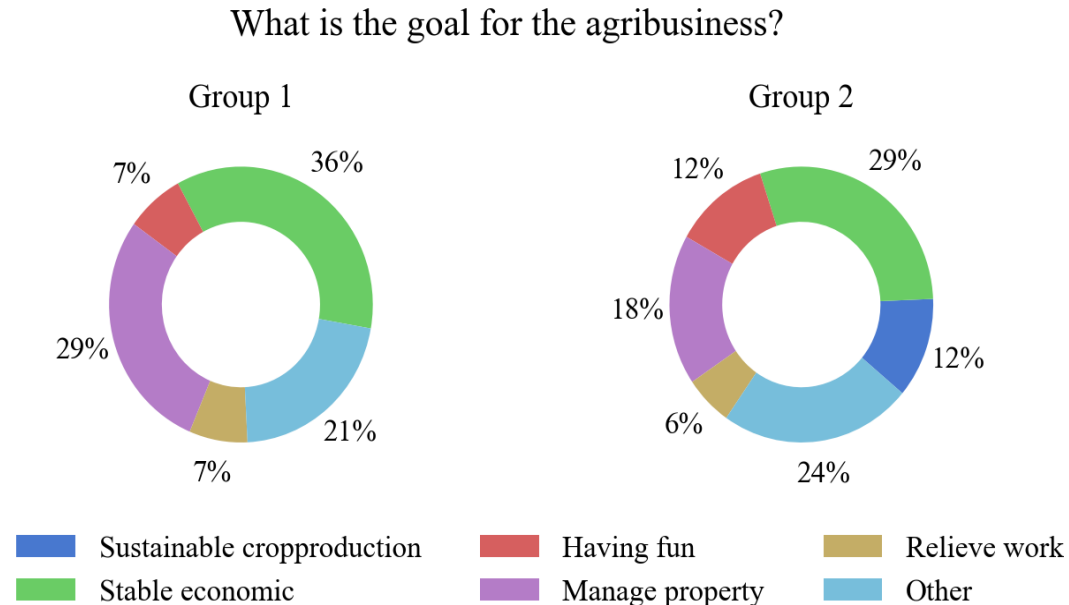


Figure 8. The goal for farmers that manage a farming business Own illustration.

The result showed that the majority of farmers desire a stable economic result in the company. The second most important goal was shared between managing the property for the next generation as well as “other goals”, which included: to be the best in the region, repair the losses of 2018, self-owned-machinery, neighbourliness, attractive workplace, optimize grain production, new machinery, intergenerational transfer and to develop the farm and other business. The remaining goals were sustainable crop production, to enjoy work and not work too hard which was evenly shared between the groups.

4.5.2 Risk management

As shown in figure 9, the various off-farm activities that were encountered during the empirical process are presented. All the farms conduct conventional cultivation for grain production, but they also operate some sort of side business. Most farmers are renting outbuildings and housing as a side income, whereas others operate forestry land. The category “other” includes food processing or sludge storage site. The remaining second businesses are snow removal, livestock production and machinery services.

Different second business

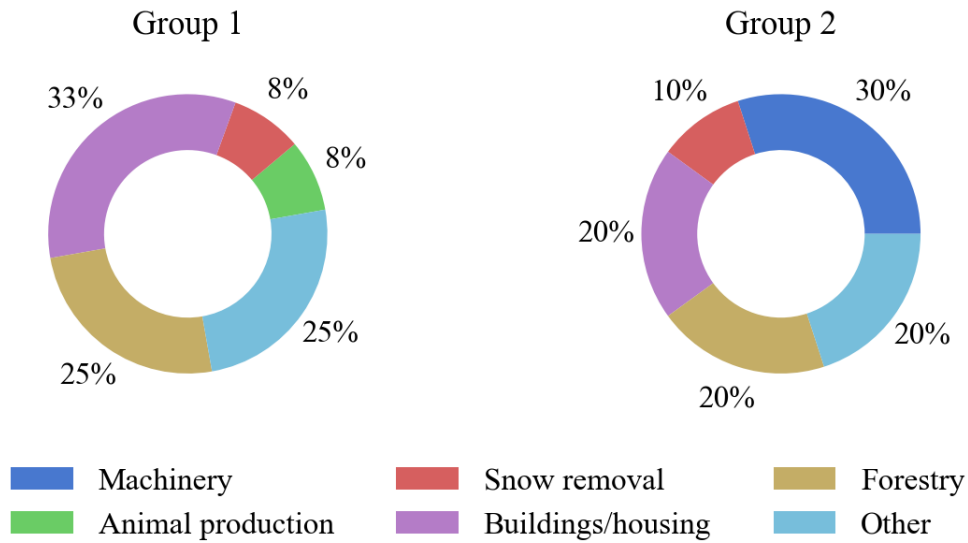


Figure 9. Farmers' different side business. Own illustration.

The responders were asked about which factor, harvest or price, - has the most negative influence on the economic result. Three farmers in each group answered that the climate/weather/yield per hectare has the largest impact on the result. The remaining respondents were divided, 2 cases thought the price was the most insecure and considered themselves to have more stable harvests over the years in group 1. While group 2 had two farmers that could not decide on which factor had the most influence and concluded that each factor plays an equal role.

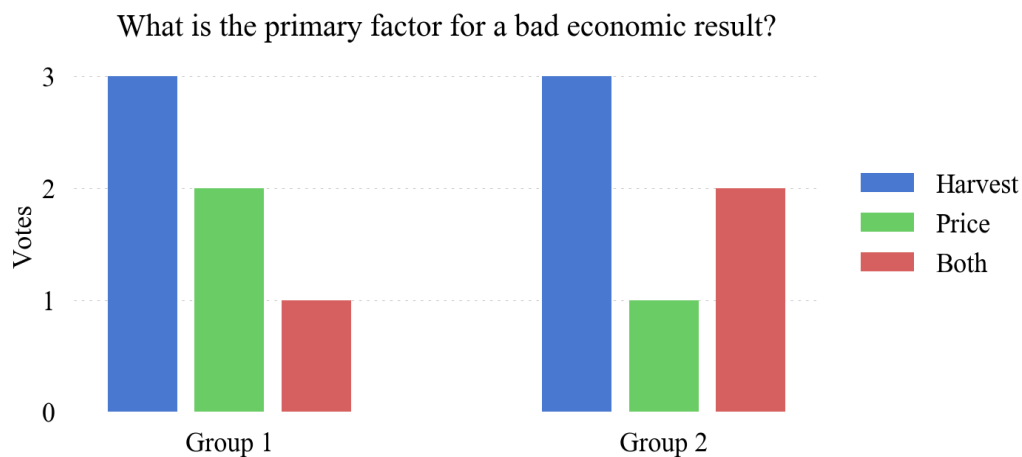


Figure 10. Primary factor for bad economic result. Own illustration.

The results of this study show that among futures users, three of the respondents consider themselves as risk-averse. Two of the respondents view themselves as risk-neutral and only one considers themselves to be risk-takers. The difference compared to non-futures users, is however quite small. Among the non-futures users, only two considered themselves as risk-averse while three considered

themselves to be risk-neutral. One of the non-futures users considered themselves to be risk-takers, identical to the futures-users group.

4.5.3 Decision-making process

In table 5, a collection of selected questions is summarized in average values from each group, see appendix 1. Each question is defined by a scale from 1-5 where 1 means not at all and 5 means almost every time. Each farmer had to choose a number that they considered to represent their standing. The first question *Analysis of profitability before signing contract* concerns if the farmer analyzes the profitability before signing a contract. Second question *Analysis of the market before signing contract* examine whether the farmer analyses the market before signing a contract. The third question *Strategy in advance* examines if the farmer has a defined strategy in advance. Fourth question *Talks to adviser* examines if the farmer talks to an adviser before selling their grain. The last question *Talks to neighbours* concerns the relation to neighbours, family, or friends before they sell their grain. Futures users are in general characterized by lower values for all the questions.

Table 5. Selected questions from the interview guide.

Questions – agree statements (1 – 5)	Group 1	Group 2
1. Analysis of profitability before signing contract	3,17	3,41
2. Analysis of the market before signing a contract	3,67	4,08
3. Strategy in advance	3,17	4,00
4. Talks to an adviser	3,25	3,33
5. Talk to neighbours	1,83	3,33

4.5.4 Transaction cost

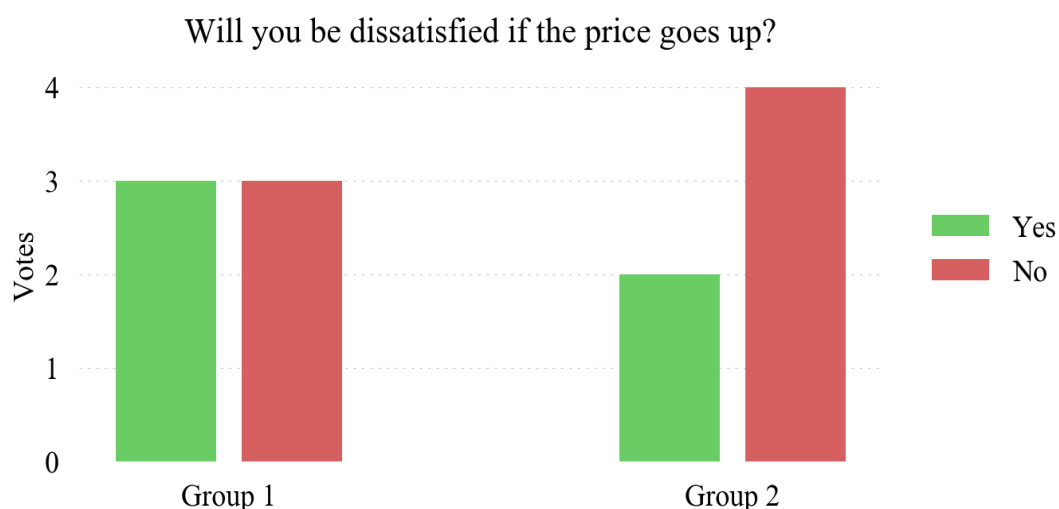


Figure 11. Answers to the question of whether farmers are dissatisfied if prices increase after contract is signed. Own illustration.

Further, it could be noted that most of the interviewed farmers in the study would not be dissatisfied in the event price increases after a contract is signed. The distribution of this answer is that two futures users were told they would be, and only one non-futures user. The interpretation is that those farmers who become dissatisfied if the price increase after a contract is signed, to a greater extent strive to obtain a peak price. In those cases, the attitude is more similar to a risk-taker, and more time is spent to search, negotiate and controlling. This implies larger transaction costs, according to a previous study by Riordan & Williamson (1985) and Pindyck & Rubinfeld (2005). However, the interpretation is that it is not necessarily a difference between futures users or non-futures regarding this specific question.

Furthermore, 50% in group two (non-futures users) believe that they would need to spend more time monitoring the market and searching for information about market developments before signing a contract. Only one out of six farmers experienced the same among the futures users. The conclusion is that farmers that use futures contracts tend to feel satisfied with the time spent on market monitoring.

Do you think you need to spend more time on strategies?

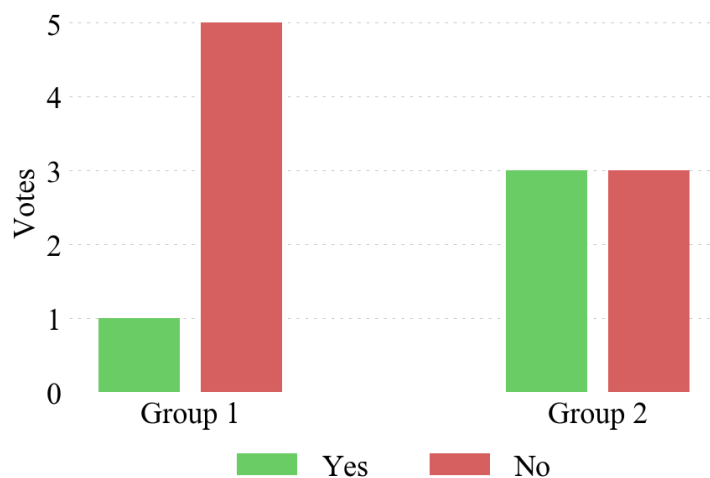


Figure 12. Answers to the question of whether farmers are dissatisfied if prices increase after a contract is signed. Own illustration.

4.5.5 Social capital and trust

The respondents of this study have all confirmed the importance of having a good relationship with the buyers and the company that they are selling their grain to. The relationships with buyers are important due to the feeling that you are dealing with a professional which provides a better discussion about the price. The relationship with the company is important because as a farmer you must trust that the buyer can pay for the grain, in full and on time. This does not seem to be a problem among the larger actors in the market. For smaller buyers, their size

reputation and awareness might become an obstacle to farmers who do not trust that the smaller actor can fulfill their part of the deal.

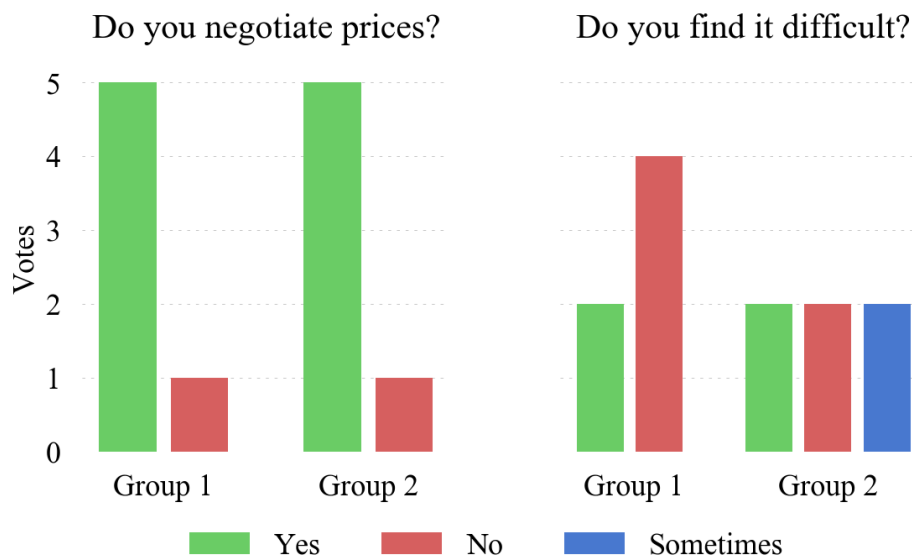


Figure 13. Statistics of negotiations with buyers, and if the farmers find it difficult. Own processing.

Figure 13 displays a summary of the two groups where the two columns on the left represent the answer to the question “*Do you negotiate prices or contract with your buyers?*” One from each group answered no and the remaining answered yes. The two columns on the right represent the answers from farmers to the question “*Do you find it hard to negotiate prices or contracts?*” This result is more varying. About half of the farmers viewed it as difficult. One question that is not presented in the figure is “*Do you trust that your buyer offers you the best price?*” Only one of the 12 responders answered yes, whereas the remaining do not trust their buyers to offer the best price or are more doubtful.

Overall, the interviews revealed that all farmers are members of different associations and similar social commitments which they value highly. Everyone states they have a good relationship with their buyers. Some were perceived to be good and had a more relaxed conversation. Some are more professional and some were both good and professional. Table 6 displays a selection of two questions, where the answers are represented as the average values from each group. Each question is based on a scale from 1-5. Each farmer had to choose a number which they considered themselves to be accurate with. The first question *Joining my favourite buyer* considers if the farmer’s favourite buyer/buyers would transfer to another company, would the farmer follow and deliver grain to the new company. The second question *Same buyer/buyers last five years* considers whether the farmer has negotiated with the same person in the same company during the last

five years. As table 6 reveals, non-futures users (group two) display a higher score for both the first and second question.

Table 6. Statistics answering. Own processing.

Questions – agree statements (1 – 5)	Group 1	Group 2
1. Joining my favourite buyer	2,66	3,08
2. Same buyer/buyers last five years	2,50	3,33

4.6 Decisive factors for using forward or futures contract

Figure 14 below illustrates the decisive factors farmer's cited when choosing to use or not to use futures contracts in their grain marketing strategy. Even if group 2 are not using futures contracts, was their motivation for their decision. See appendix 4 for detailed coding.

Group 1		Group 2	
Futures contract	Forward contract	Futures contract	Forward contract
+ Market interest	- Production risk	- Reach my goal anyway	+ Physical buyer
+ Standardized contract	+ Secured price	- Have not started yet	+ Local buyers/branding
+ Easy to reach average price		- Hard to understand/not enough time/not my style	+ Special contract
+ Daily updated by phone message			+ Social Capital

Figure 14. Decisive factors in both groups, futures users to the left. Own illustration.

It could be noted that futures users, group 1, appreciate the standardized contracts in the futures market. This means that some of the production risks are reduced compared to forward contracts. The production risk of contracted quality for forward contracts was discussed several times by the farmers as a negative factor with forward contracts. Given the fact that the forward contract requires the farmer to deliver a certain quality of the contracted volume, it is hard to predict before harvesting the crops. Furthermore, another decisive factor that future users appreciate appears to be the daily updates by a phone message from the bank. According to some of the farmers, another rationale is that it is easy to obtain an average price with futures contracts. This may confirm what Rolfo (1980) and Andersson & Lidfeldt (1994) stress, that hedging minimizes the price variance, and therefore the expected outcome would land in between an unfavourable and a favourable price outcome. Therefore, a more stable average price is achieved. Furthermore, the farmer's interest in the futures exchange market appears to be a very important factor when choosing to be a futures user or not. But since trading with futures contracts must be combined with a physical sells strategy, seemed forward contract a good option for some then the price was favorable.

To a larger extent, non-future users, group 2, claim that they appreciate contact with a physical buyer. Within the area of grain marketing, non-futures users reach their goals and manage their price risk to a larger extent by searching for physical buyers to deal with. These could be smaller mills nearby that demand specific grains or specific qualities. In those cases, farmers with larger arable land have a greater opportunity to find local buyers since they may have the opportunity to deliver larger volumes at a specific quality. These can be labelled as special contracts with the framework of forward contracts. Because of the reason that the farmers reach their goal anyway, do they not have the motivation to start with futures contracts. Some of the responders in group 2 planned however to start with futures contracts but had not started yet. The reason for the lack of physical contact with futures contracts was that it seemed hard and difficult to understand the financial market that futures contracts obtain also a big factor in not trying it.

It can furthermore be noted that non-futures users substitute the option of futures contracts by having access to a slightly higher level of social capital. Of course, this does not necessarily imply that farmers in this group have a larger social circle than other farmers. However, they tend to talk more about prices and contracts with colleagues or within the social circle to share experiences. Furthermore, they tend to appreciate and demand a better relationship with their buyers to a greater extent and often base their decisions on a dialogue with the buyer.

4.7 Chi-square test

Table 7. Chi-square test. Own processing.

Question:	A significant difference or not?
1. Analysis of profitability before signing a contract	No significant difference
2. Analysing the market before signing a contract	Significant difference
3. Strategy in advance	No significant difference
4. Talks to an adviser	No significant difference
5. Talks to neighbours	No significant difference
6. Joining my favourite buyer	No significant difference
7. Same buyer last five years	Significant difference
8. Spot sales exposure price fluctuations	No significant difference
9. Advantage to deliver at another period than harvest	No significant difference
10. Subscribe to marketing letters	No significant difference
11. Distribute contracts equally every year	No significant difference
12. Contact with the same company	No significant difference
13. Call around to different sellers	No significant difference

The result from the chi-square test shows that there is a statistically significant difference in the answer distribution for question number 2 and number 7 in table 7. These were regarding if the farmers are analyzing the market before signing a

contract, and whether they have had the same buyer/buyers in the latest five years. Regarding the rest of the survey statements, there is no significant difference according to the chi-square test. However, this implies the fact that we can state that the interviewed farmers in the respective group are reasoning differently according to these issues. Hence, the farmers that are not using futures contracts, seem to have had the same buyer, or buyers, the latest five years to a greater extent than the future users. Further, the non-futures users seem to analyze the grain market to a greater extent before signing a contract than farmers that are using futures. Consequently, it cannot be stated that farmers in the respective group are perceiving the other questions differently, according to the result from the chi-square test.

5. Analysis and Discussion

In a summary there the researcher discusses the research questions presented in Chapter 1. This is followed by the analysis of the empirical finding, the relation between empirics and the theoretical synthesis.

5.1 Answer to the research questions

This section answers the two research questions in the study: *What marketing strategies do farmers use for managing price risk and why?* and *What factors affect the choice between futures and forward contracts?*

5.1.1 Choice of strategy and why

The choice of strategy is primarily depending on the market interest of a farmer, he/she chooses to use futures contracts to manage price risk. A farmer who does not use futures contracts tends to use larger volumes of forward contracts, pool agreements and to store the harvest to deliver in the off-season. Farmers that believe production risk is a big issue and may generate a bad economic outcome, tend to be more worried about the quality and quantity of the harvest. To hedge the price of the harvest and thus reduce the production risk, especially concerning quality, the farmers in those cases tend to use futures contracts because they are standardized market contracts. This argument is often revealed among the futures users. This means that the farmer does not have to produce a certain quality to obtain a certain price, which they argue a reason for choosing futures. If farmers in the non-futures user group do have an interest in entering the futures contracts market, the choice usually ends up being a forward contract in the meantime, but with the disclaimer that they plan to start using futures contracts in the future.

The farmers who do not consider themselves interested enough in futures contracts trading, instead claim that they are satisfied with their current grain marketing strategy. A further argument in those cases is local branding, which means that the buyer of the harvest might have mills nearby. The perspective is given that some farmers try to find mills, often nearby, to do business with. This was especially the case for those farmers who operate larger areas of arable land. These findings were revealed in both groups. Non-futures users tended to enjoy meeting the physical buyer and further explains that there is no time to trade with futures contracts. Finally, farmers in both groups, but mainly group one, the futures users, are to a greater extent looking for a less cohesive group of entrepreneurs to discuss prices with.

The use of pool agreements is mostly motivated to distribute risk. Non-futures users tend to use pool agreements to a greater extent than futures users. The reason is mostly to distribute and reduce the price risk, but also a liquidity issue since the payment is received in two parts. However, not every buyer offers a pool agreement. The interpretation is that farmers who consider themselves able to negotiate better prices than what is offered in a pool agreement, tend not to use pool agreements in their grain marketing strategy.

Also, farmers' use of spot prices is closely related to resource allocation, such as storage facilities. This means that if the possibility to store the harvest exists, farmers in both groups to a greater extent choose to store the harvest and sell it to the buyer that offers the best spot price. Depending on the farmer's risk attitude, the farmer chooses to store without knowing the future buyer, - or the date of delivery. A risk-taking farmer more often stores uncontracted good and sell grain at the best presumably price, while a more risk-averse farmer agrees on selling the crop in advance, which is a forward contract. This may be interpreted as farmers who define a target price to sell grain at "peak prices" potentially face higher transaction costs since they are monitoring the market to a greater extent.

5.1.2 Affecting factors between futures and forward contract

Decisive factors for choosing a marketing strategy for grain and oilseeds are mainly market interests and the goals of the farmer. Depending on how well the goals are met, farmers tend to look for other approaches. What is later found as decisive factors is social capital at attributable buyers, and how the logistical problems during harvest and delivery can be managed. Furthermore, the extent on the level of how to contact seeking buyers is also playing a role. If the buyer calls and tips the farmer, it is most appreciated, and the probability of signing a contract increase. This is noticed in both groups. In summary, it can be noted that the relationships with both buyers and banks largely determine the probability of entering a contract as part of the grain marketing decision process. Farmers tend to appreciate when their contact persons know their business and suggest when it is time to respond to these issues, based on their relationship. This is noted regardless of whether it concerns the relationship with the bank or the relationship with the buyers, as well as futures or forward contracts. However, the interviews reveal that a larger share of the non-futures users consider it to be more beneficial with a stable relationship to buyers. However, futures users do not display this behavior to the same extent.

Additionally, four out of six interviewed farmers who currently do not use futures contracts, want to start using it in the futures. The explanation is that with these contracts they would remove some of the risks since the quality issue in the standardized futures contracts is not an issue given that they buy back the contract.

Besides, they can deliver grain to any buyer. Forward contracts, on the other hand, require farmers to deliver grain to a specific buyer. The ability to sell to anyone and the interest for futures markets are crucial factors for initiating the use of futures contracts. It is further noted that farmers who consider themselves able to handle price risks in a better way themselves, often choose to trade futures contracts. Hence, it could be noted that the flow of information that stems from daily text updates from the bank or market letters often serves as a basis for decisions, especially when the farmer uses futures. On the contrary, the information is obtained to a greater extent from the buyers if the farmer does not use futures contracts.

Furthermore, decisive factors as market interest, risk attitudes, goals of the farmer and how satisfied farmers are with their strategies affect their decisions. If the strategy is to avoid unfavorable prices, farmers in both groups tend to be aware that they usually miss the peak prices. Given that the market strategy is to always choose a forward contract, farmers often have a better idea of their production costs. Irrespectively if they are characterized as analytically or intuitively, they need to know when the farm is profitable. Experience-based analysis tends to be more common with the long-time experience of the farmer. In summary, it can be noted that intuitive decisions tend to be positively related to experience.

The empirical finding of this study stress that differences between the marketing strategies for wheat and oilseeds are limited. However, oilseeds are to a greater extent not stored for an extended period, since according to the farmers' oilseeds are difficult to store. This means that oilseeds are increasingly sold during or shortly after the harvest period. Regarding the time aspect for signing a contract, farmers who operate the business further north in Sweden usually do not sign contracts before the winter, due to the risk that the crops will not survive the winter. Especially oilseeds face the risk of not surviving the winter compared to wheat. In terms of yield variation of oilseeds, it also implies that it is quite common for oilseeds to be sold at spot price during harvest. This tends to be common in both groups. In summary, storage difficulties of oilseeds and uncertainty concerning winter survival, yield the conclusion that futures contracts of oilseeds are considered less suitable. Most farmers that use futures contracts, trade with wheat contracts.

In conclusion, it can be noted that there exist substantial differences in the management of price risk between farmers who trade with futures contracts and those who do not. Farmers with a strong interest in market developments tend to use futures contracts, while farmers who aim at selling grain at the highest possible price do not. However, some of the current non-futures users claim that they would

like to start using these contracts in the future. Furthermore, the quality risk, such as signing a forward contract in advance and the risk of not fulfilling the quality, plays a greater role for farmers that use futures contracts. This is a recurring argument for farmers using futures contracts, group one.

5.2 Group analysis

In this part, the empirical findings from the two groups are analyzed based on the theoretical synthesis in chapter two.

5.2.1 Risk management

The question about uncertainty in the agriculture business and choosing between alternatives to affect the welfare position is according to Harwood et al. (1999) obtained by reducing risk impact. Reducing risk impact could be achieved in many ways, but the grounded theory for how to handle risk is the attitude towards risk (ibid). As further presented in chapter 2, risk management in grain production according to Harwood et al. (1999) is a balance of activities with the risky outcome and varying results in terms of expected returns. Further, by reducing the risk of a bad outcome at the farm, the welfare of the farmer is affected (ibid).

Interestingly, the empirical findings regarding the risk attitudes among the farmers interviewed in this study, seem to suggest that non-futures users are more positive to take risks in their farm operation. Even though the difference is marginal, the empirical result could be interpreted in that manner. It seems to indicate that farmers that do not use futures contract trading, are more positive to forward contracts instead. This implies that they are, in some cases, more positive to face production risk. The production risk with forward contracts includes the quality risk, as well quantity risk. This means that the farmer signs a contract to deliver a product with a certain quality and quantity, sometimes even though these parameters remain uncertain. The analysis is that farmers who believe that the price has a greater impact on the economic result than the harvest quantity are more likely to use forward contracts. In general, if the farmer experiences a stable harvest over the years, the production risk is reduced in the farmers' perception. It could therefore be noted, even though the difference is marginal, that futures users experience more production risk than non-futures users. Given this perspective with a stable harvest volume and quality over the years, farmers tend to be less worried concerning production risk and they tend to choose forward contracts to a greater extent. Similarly, farmers that to a greater extent are concerned about the yield risk, including harvest quality, tend to choose futures contracts trading instead. However, like the study of Jordaan & Grové (2008), the empirical findings of this study confirm that depending on the risk-attitude of the farmer, the probability of using

either forward or futures contracts increases if the farmer considers themselves as risk-averse.

An interesting result of this study confirms the result of the study conducted by Jordaan & Grové (2008) and Turvey & Baker (1990). It implies that farmers tend to diversify their companies to decrease their risk exposure. In this case, it would be to find other sources of income besides crop production. According to Jordaan & Grové (2008), farmers tend to be more risk-averse if the debt load is high. Risk exposure is positively correlated with both hedging of prices but also diversification (ibid). It could be further noted that the empirical findings of this study also support this result. The farmers interviewed who felt highly indebted and stressed tended to consider themselves more risk-averse. Among the farmers with risk-averse attitudes, there existed additional alternative enterprises and they were also inclined to hedge prices to a larger extent than those who considered themselves risk-takers or risk-neutral.

5.2.3 Decision-making process

What was observed in the study conducted by Öhlmér *et al.*, (1998) were the subprocesses besides *detection of the problem, the definition of the problem, analysis and choice of implementation*. The four subprocesses were *searching, paying attention, planning, evaluating, choosing and checking the choice* (ibid). This study reveals, given the empirical data, that every farmer in this study revealed that selling uncontracted grain or oilseeds at spot price during the harvest period was a bad choice. Despite this, some farmers sold uncontracted grain during the harvest period anyway. Further, some farmers did not find any other option since the lack of storage or other logistics problems resulted in no other choice. However, the problem about “no other choice” occurred due to a larger harvest than expected. Another argument for spot price delivery during the harvest period was oilseeds since oilseeds were viewed as difficult to store.

The problem detection that is evident for both groups is the problem that most farmers define similarly. This definition is according to an interviewed farmer “*price tends to always be at its lowest during harvest time – except 2018*”. This statement is supported by the findings of Ugander *et al.* (2012). This implies a major factor determining grain marketing strategies, namely what volume the farmer can store at the farm. Secondly, the analysis, choice and implementation subprocesses could differ from each farmer, since every farmer has different interests and prerequisites, as well as different goals for the company. Therefore, the handling of the subprocesses differs between the respondents. Non-futures users tend to implement a strategy that they follow each year to a greater extent than futures users. However, the difference is relatively minor. Also, the difference in the

decision-making process between futures users and non-futures users is limited. The tendency is that futures users are more prone to take decisions more intuitively than the reference companies.

However, market monitoring seems to be the most pertinent factor affecting the decision-making process of futures users. Also, decisions by futures users tend to be more intuitive. The explanation for this finding is that farmers do not know for sure how the market will develop. For this reason, the tendency of non-futures users seems to suggest that more decisions are made on an analytical basis. This could be for example a deeper analysis of the profitability before signing a contract. However, the findings for both groups suggest that farmers tend to analyze and create their idea of where the market is heading.

5.2.4 Transaction cost

According to Abrahamsson & Andersen (2005), transaction cost could be described as the cost for products to change owner. Although, previous studies experience difficulties defining the quantity and how to estimate it. This study uses the definition by Bogetoft and Olesen (2004) where the transaction cost is the coordination of production and coordination of risk.

As such, it could be noted that farmers in both groups stays continuously informed about the market and observe price developments, which is the basis for their decisions. Futures users tend to spend more time in market monitoring in general, especially farmers who do not follow a specific strategy. Farmers that do not follow a specific strategy among the futures users, tend to buy back their futures contract to a greater extent before it expires. A major difference was that futures users make their marketing decisions more intuitively. According to the theory of transaction costs by Riordan & Williamson (1985) and Cooter & Ulen (2016), described in chapter 2, transaction cost occurs when *negotiating*, *searching*, and *controlling cost*. The empirical findings in this study imply that futures using farmers tend to search for information to a larger extent than non-futures users. Non-futures users tended to base their decisions to a greater extent on analysis of the profitability of the contracts, although there was little difference between the groups. However, both groups are searching approximately the same amount of time, but the largest crucial result is that non-futures users tend to stop monitoring the market development after they decide to sign a contract. The reason is that futures users need to decide the appropriate time for the repurchase of the futures contract.

In summary, farmers in general with an established marketing policy, according to Riordan & Williamson (1985), tend to face lower transaction costs. Riordan & Williamson's (1985) statements are also confirmed by the interviewed farmers who

maintain a close relationship with the buyer. This implies that a close relationship with the buyer increases the probability for farmers to stay loyal and not search for other alternative buyers. By spending less time searching for alternative buyers, farmers decrease their transaction costs (ibid). The explanation is that farmers who appreciate the logistics, price updates and cooperation are determining factors for a close relationship with the buyer. The implication is that there are substantial incentives to return to the purchaser over the years, to reduce costs for searching, negotiation and in some cases controlling, as explained by Riordan & Williamson (1985) and Cooter & Ulen (2016). However, this result was observed in both groups.

5.2.5 Social capital and trust

Barbalet (2009) argues that the term social capital is to be regarded as an investment in relationships and social resources. These resources do not have a definite definition, but several studies agree that it provides a lot of influence in the decision-making process. How farmers decide to sell their grain depends on many influencing factors where the social part is one factor that plays a substantial role. Trust is a form of a social resource and is a fundamental part of all relationships.

This result might be explained by the fact that non-futures users are more relationship-oriented and value the network and social events slightly more. When a question to a non-futures using farmer was posed why he did not use futures contracts, the motivation revealed that he wanted to look the buyers in the eye and feel the physical connection. Another farmer answered that he like the concept of futures contracts but felt too old and was not comfortable with futures contracts trading. These two farmers behaved similarly in other ways, such as updating themselves on market information but could not find the motivation to try futures contracts due to the social obstacle and feeling insecure. This finding reveals how trust and comfort in existing buyers play a big role. The interviews also revealed that a larger share of the non-futures users considered it to be more beneficial to maintain a relationship with buyers they return to and stay loyal to. Examples of benefits are flexible logistics solutions, buyers that take the initiative to contact when prices are favourable, or provide price updates through e-mail. Futures users did not display this behaviour to the same extent.

5.3 Quality discussion

The following section discussed the methodology of the study, which includes factors that impacted the methodological design, sample selection, trustworthiness and credibility of the study. The section also discusses what measures the authors have taken to prevent this.

This study focused on a multiple case study design with both quantitative and qualitative approaches which have allowed the researchers to gain an in-depth understanding of trends and patterns, studying diverse perspectives, or understanding the relationship between variables (Heigham & Croker, 2009). Comparing quantitative and qualitative data also sets to produce well-validated conclusions (ibid.).

Before the interviews of the 12 farmers, there were two pilot-interviews from both groups. The pilot-interviews are not included in the result but were done only to ensure that the interview questions were well asked. The authors also asked the pilot-interviews how they experienced the interview and if anything was unclear. Then starting to collect data from the 12 responders, the authors send out a pre-testing questionnaire. It allows the authors to test the validity of the questions, in other words, that the right data is being measured (Bryman & Bell, 2015). It also makes it possible to modify the interview questions based on the result of the pre-testing questionnaire. During the data collection, the authors used the same interview guide and recorded all interviews at the same time as taking notes. By doing this, it ensures that the data was collected frequently. After the interview, each recording was listened through by both authors and complementing the transcription to ensure trustworthiness that the authors interpreted similar conclusions from each respondent. Then the transcription was done each respondent received a copy to ensure that the authors had understood them correctly. Conforming 12 interviews takes time, but gives the result high reliability.

Since the study was conducted by two researchers with different backgrounds and experiences, the authors tried to minimize the bias with daily discussion and collaboration throughout the process. The method then two or more researchers in the same study provide multiple observations and conclusions, is called investigator triangulation. This method can bring confirmation of findings, different perspectives and adding breadth to the phenomenon in interest (Carter et al., 2014). One of them has practical agricultural experiences, while the other has very little. This saw the authors as a strength since an experienced author may start drawing his conclusion on the interview. But with a less experienced researcher, a more throughout explanation is needed which makes the answers clearer.

The interviews were conducted in Swedish since the study was aimed at Swedish farmers. Since the authors choose to write in English, could the translation of the result not be as accurate as it is then interviewing in the same language as writing the report. The authors have also not English as their mother tongue, which affects the English writing in the thesis. In an attempt to minimize the quality loss of the thesis, the authors received help from an outsider with better English skills.

6. Conclusions

With the analytical chapter as a basis, this chapter presents the conclusions from the empirical study by answering the research questions. The study aims to find similarities as well as differences between farmers' risk management methods within their choice of marketing strategy.

This study aimed to develop an understanding of how farmers make their decisions when choosing marketing strategies. It also examined which factors affect farmers the choice between future and forward contracts.

How farmers make the strategic decision is mainly based on his/her interest in the market, risk-attitude, presumption on the farm such as storage opportunities. Farmers that not using futures tend to use the larger volume on forward contracts and rely on the social network that can promote special contracts. Futures users keeps a higher frequent update on market information throughout the whole year, while non-futures users only search for information when it is time to sell. Both groups use some kind of risk diversification in different forms, and it does not seem to be a pattern around risk attitudes in any group. Both groups argued that different crops have different strategies. Oilseeds for example is a crop that gives uncertain results and difficulties in storage, which then means that it is often sold as soon as it is harvested, in the form of a forward contract or spot delivery.

It is showed that decisive factors for choosing either futures or forward contracts from the two groups are the social connection to the buyer and how the logistics can be solved such as delivery time and flexibility. Non futures users valued these social connections and logistics solving more than futures users. Non-futures argue that forward contracts force farmers to ensure the quality which discourages them. Some non-futures users wanted to start with futures contracts in the future but have found it difficult to understand. From the chi-square tests, we can see a statistically significant difference in two out of seven questions, presented in Tables 5 and 6. This means that those two questions showed a statistical pattern between the two groups while the remaining questions showed that the comparing of both groups was a random pattern. One of the two proven questions was how much the farmer analyze the market before signing a contract, which non-futures users had statistically proof to have a clearer pattern to do compared with futures users. Non-futures users also showed to use the same buyer in the latest five years significantly more than futures users. From the interviews did the authors also experience that non-futures saw it more beneficial to have a more stable relationship with the buyer.

However, general from both groups is that intuitive decisions were connected to farmers with longer experiences.

6.1 Future research

This study has through semi-structured interviews examined what motivates farmers when selling wheat and oilseeds. The purpose of the study was to investigate why farmers tend to do one way or another, what preferences and thus behavior can be distinguished. The basis for the study is 12 respondents who were divided into two groups, depending on the use of a financial futures contract or not. Further research in this area might use the empirical evidence in this thesis as a basis for a broader study. Examining preferences and behavior for different types of enterprises, through a statistical survey, might be of interest as an example of whether farmers with livestock production might act differently. To conduct a broader study with a wider range of respondents, a future study could be a statistical representation survey to examine what farmers do given differences in location, size and enterprise structure. There would probably exist differences and similarities concerning the management of the grain marketing problem that could be found according to detailed and extensive data regarding experience, geographical locations, age, education, or crop selection. Based on the empirical evidence from this study, the knowledge about *why* farmers make certain decisions, as well as the *factors* that affect the decision between futures or forward contracts, are addressed.

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Reports

Statens Jordbruksverk, SJV

Year/Number

- 2008:1** Terminshandel med jordbruksprodukter – översikt
- 2012:11** Femton år som medlem i EU – Förändringar i konsumtionsmönstret
- 2014:21** Vad betyder EU för vårt jordbruk och vår mat?
- 2014:08** Marknadsöversikt - Spannmål

Unpublished material from Lantmännen

Gerhardsson, Per, Spannmålsenheten, Lantmännen Lantbruk. Received by email. 2020-12-09.

Acknowledgements

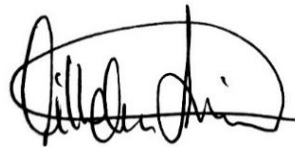
This thesis is enabled by supports from Handelsbanken's Department of Forestry and Agriculture, which provided us with 12 farmers to interview. We would therefore like to thank Rolf Åttingsberg at Handelsbanken who helped us with suggestions and contact information.

We would like to thank our supervisor Hans Andersson for all support, advice and lots of anecdotes to help us get through this master thesis. This thesis would not have been as successful unless we received valuable feedback from our opponent, friends and family. We want to show some extra gratitude to Julia Ansved that has given invaluable support and lots of comments. Finally, we would like to express our gratitude to all the participating farmers for sharing their time and thoughts with us to make this study possible.

Uppsala, January 2021



Caroline Beck-Friis



Vilhelm Linde

Appendix 1 – Interview Guide

Questions before the interview

1. Which crops do you produce? What is the percentage of crop distribution for the 2021 season?

2. Has there been any major change in the company in the past year that plays a role in production and distribution? For example, total area, dryer or other.

3. How will the arable land on your agricultural holding be divided into hectares for 2021?

Total ____ Owned ____ Leased ____ Care agreement ____

4. How much grain and oilseed can you store on the farm?

5. Can you dry the entire harvest before delivery? If so, is it something that is delivered undried? What is delivered undried?

6. How many tonnes of cereals and oilseeds are delivered to buyers during a normal year?

7. How did you sell your harvest in 2019? Please also state how many tonnes you secured through the financial semester if you used it.

Spot delivery:

Pool agreement:

Forward contracts (fixed price agreements):

Futures contract (financial instrument):

Other / Depot:

Other please state what:

8. Approximately what percentage of your annual sales are based on income from crop production?

Questions during the interview

Agent, company-related questions

1. How old are you?

2. What is your education?

3. Where in Sweden do you conduct business?

4. How long have you been running the business and what is your role?

5. What does the overall business look like in the company?

6. Do you have any other form of contract cultivation?

7. What are your goals with the business?

Short-term 1-2 years -

long-term > 10 years -

8. How many employees does your business have?

9. Do you have previous work experience outside agriculture? If so, where?
How long?
10. Do you have any other income from employment / other business activities in addition to the agricultural company? How much of a full-time job is it?
11. Do you feel that you are highly indebted? Is indebtedness something you can feel stressed about?
12. How do you generally feel that profitability is in the company?
Unsatisfactory, satisfactory, very satisfactory.

Risk management

- 1 When in the year is the majority of your grain and oilseed sold physically, when does it usually leave the farm?
- 2 Why did you sell as you did in 2019? Why did you choose the sales strategies you stated in question 7?
- 3 I believe that the sale of cereals and oilseed at harvest at a spot price increases the exposure to price fluctuations for my company.
1 (Not at all) 2 3 4 5 (Almost evenly)
- 4 Instead of selling grain at a spot price at harvest, have you considered an alternative solution to reduce price fluctuations? What made you start with that?
- 5 I believe that it is a competitive advantage for the company to be able to deliver dried goods at a period other than during harvest.
1 (Not at all) 2 3 4 5 (Almost evenly)
- 6 Why?
- 7 If you sell/deliver grain and oilseed directly at harvest, which crop is it and why? Which contracts are then usually used?
- 8 Do you think that price fluctuations in the market lead to variations in your financial results between the years? If so - how do you feel about it? If you get a good result or a bad result, is it mainly due to price differences in the market or other factors that matter?
- 9 What is your general attitude to signing futures / fixed-price contracts for a crop before it is sown? Any difference in how you think about drawing before spring sowing or autumn sowing?
- 10 What is your general attitude toward signing futures / fixed-price contracts for a crop before it is sown? Any difference in how you think about signing before spring sowing or autumn sowing?
- 11 Have you calculated a production cost that for your company? If so, which one? Do you have a target price for your grain and oilseed that you are striving for?

- 12 Do you think that futures trading, i.e. so-called futures contracts on internationally traded exchanges, is useful for managing price risk? If yes, justify, if not justify.
- 13 Do you use futures trading? If not, skip to question 24.
- 14 How long have you been doing futures trading?
- 15 How did you get information about the service?
- 16 Where / is the information difficult to understand?
- 17 Did it take a long time from the time you found out about the service until you started using it? Why?
- 18 Briefly describe what you think is positive and negative about futures trading?
- 19 How do you usually set up the strategy of futures trading? Do you do the same thing every year? How did you do in 2019?
- 20 After selling grain through financial futures trading, what factors influence your decision regarding the time of repurchase?
- 21 In what way do you think that futures trading may have changed/affected your business?
- 22 Do you find it troublesome to be up to date on both physical trading and financial trading?
- 23 Do financial contracts affect the planning of your cultivation?
- 24 Do you have any other activities than agriculture in your company to spread any risk?
- 25 Do you like to take higher risks to enable a possible high profit, or would you rather give up a possible high profit to avoid the risk of a bad outcome?
- 26 Did you change your strategies for selling cereals and oilseed after harvest in 2018?
- 27 Do you ask for any advice before choosing a sales method? If so, which one?
- 28 Have you considered doing differently in the future when selling grains? If so, what?
- 29 If you have signed a contract, with a price that you are satisfied with at the time of writing, would you later be dissatisfied if the price on the market rose significantly, provided the harvest yield is the same?

Decision process

- 1 Do you use new calculations/budgets every year to plan the business? Do you do these yourself or do you have advice? Do you then use this material?

- 2 Before deciding to sign a contract, I always do a deeper analysis and calculate if it is profitable for my company before I decide
1 (Not at all) 2 3 4 5 (Almost evenly)
- 3 Before the decision to sign a contract, I have made a deeper analysis of the market
1 (Not at all) 2 3 4 5 (Almost evenly)
- 4 I have a definite strategy in advance for how to sell my harvest
1 (Not at all) 2 3 4 5 (Almost evenly)
- 5 What advice do you get from your business when it comes to trading in cereals and oilseed rape?
- None
- Plant cultivation consultant
- Financial advisor/business advisor/bank
- Other/other:
- Who / what would you like advice from?
- 6 I always talk to the person I mentioned in the previous question before deciding how to sell
1 (Not at all) 2 3 4 5 (Almost evenly)
- 7 I always talk to other people in the industry before I decide how to sell, for example, neighbors, colleagues or friends active in the industry.
1 (Not at all) 2 3 4 5 (Almost evenly)

Social capital

- How do you value networks and social engagement in agricultural categories in general? Something you are interested in / see any value in? Why / why not?
- Does your circle of friends mainly consist of people with the same interest as you / agricultural background? Do you discuss prices or contracts?
- Are you a member of an association or similar? If so, what type of association? What do you appreciate about being a member?
- Do you miss a social network/belonging to an association?
- Do you feel that you need to spend more time looking for information on different marketing strategies?
- How do you experience your relationship with your / your grain traders?
- Do you trust that you always get the best price from your grain trader?
- If my salesperson were to switch to a competing company, I would probably go there
1(Not at all) 2 3 4 5(Almost evenly)
- I have had the same contact person at the same company where I sell grain for the past 5 years
1(Not at all) 2 3 4 5(Almost evenly)

- How satisfied are you with your sales strategy? Why?
1 (Not satisfied at all) 2 3 4 5 (Very satisfied)
- Do you think that recurring transactions with the same trader provide any benefits? If so, which ones?
- Do you negotiate prices and contracts with sellers/buyers?
- Do you find it difficult to negotiate prices and contracts?
- Are the relationships with your grain trader important for a successful sale?
- Do you consider that trust/relationship is important to the company to which you sell your grain/oilseed?

Transaction cost

- How much time do you spend deciding on a strategy?
- What sources of information do you use as a basis for your strategy? For example, newspapers, surroundings, sellers, etc.
- I subscribe to one or more different marketing letters from different publishers that I read frequently
1 (Not at all) 2 3 4 5 (Almost evenly)
- Do you think that you spend too little / enough / too much time on this?
- How do you see the value of having your dryer and storage? What degree of flexibility in choosing a sales strategy does it provide?
- I strive to distribute my contracts equally every year
1 (Not at all) 2 3 4 5 (Almost evenly)
- I always have contact with the same company and seller when I sell my grain/oilseed
1 (Not at all) 2 3 4 5 (Almost evenly)
- I always call around to most different salespeople to see what they can offer me for different contracts
1 (Not at all) 2 3 4 5 (Almost evenly)

Appendix 2 – Chi-Dquare Test

The first step according to Wahlin (2011) when conducting a chi-square test is to formulate the hypothesis, which is made as followed:

H_0 = There is an independent distribution between the groups; null-hypothesis.

H_1 = The is a dependent distribution between the groups; null-hypothesis is rejected.

Wahlin (2011, p. 231) thereafter present the formula for testing the hypothesis, which is formulated as followed:

$$\chi^2 = \sum_{i=1}^V \frac{(O_i - E_i)^2}{E_i}$$

V = Number of groups that are in the contingency table

O_i = Observed frequency, i.e. the answers from the respondents

E_i = Expected frequency, i.e. the expected answers in the respective group concerning every respondent answer in the frequency of “low” or “high”, distributed evenly between the groups.

Wahlin (2011) further describes that if the observed frequency between the groups is distributed evenly, then the null-hypothesis is true. Further, the observed frequency is in the next step compared to the expected frequency, which can be defined as:

$$E_i = \frac{Rowtotal * ColumnTotal}{Totalnumberofcounts \in thetable}$$

In the last step of the chi-square test procedure, the solution value is compared with the critical value, which is obtained from the table in Wahlin (2011, p. 320). The critical value can be obtained from the table when knowing the significance level and the degree of freedom. The significance level chosen in this study is 5% and the degree of freedom is 1. However, to reject or not reject the null hypothesis, the solution value from the test needs to be equal or greater than the critical value (Wahlin, 2011). This is presented in the yellow boxes for each question.

Chi-square procedures of each question

- Analysis of profitability before signing a contract**

Respondent	Answer		Futures	Nonfutures	Total	Percentage
Futures users	1	2	Observed <3	3	4	7 0,583333333
	2	1	Observed >3	3	2	5 0,416666667
	3	4	Sum	6	6	12
	4	5				
	5	3	EXP <3	3,5	3,5	58% of 6
	6	4	EXP >3	2,5	2,5	41 % of 6
Non-futures	7	3				
	8	3	o-e < 3	-0,5	0,5	
	9	3,5	o-e > 3	0,5	-0,5	
	10	3				
	11	3	x^2	0,25	0,25	
	12	5		0,25	0,25	
			0,07142857	0,071428571	} Added together	
			0,1	0,1		
			CHISQUARE	0,342857143		

- Analysis of the market before signing a contract**

Respondent	Answer		Futures	Nonfutures	Total	Percentage
Futures users	1	4	Observed <3	3	0	3 0,25
	2	3	Observed >3	3	6	9 0,75
	3	4	Sum	6	6	12
	4	5				
	5	3	EXP <3	1,5	1,5	25% of 6
	6	3	EXP >3	4,5	4,5	75% of 6
Non-futures	7	4				
	8	4	o-e < 3	1,5	-1,5	
	9	3,5	o-e > 3	-1,5	1,5	
	10	4				
	11	5	x^2	2,25	2,25	
	12	4		2,25	2,25	
			1,5	1,5	} Added together	
			0,5	0,5		
			CHISQUARE	4		

- Strategy in advance**

Respondent	Answer		Futures	Nonfutures	Total	Percentage
Futures users	1	5	Observed <3	3	1	4 0,333333333
	2	1	Observed >3	3	5	8 0,666666667
	3	1	Sum	6	6	12
	4	5				
	5	2	EXP <3	2	2	33% of 6
	6	5	EXP >3	4	4	66% of 6
Non-futures	7	1				
	8	4	o-e < 3	1	-1	
	9	5	o-e > 3	-1	1	
	10	4				
	11	5	x^2	1	1	
	12	5		1	1	
			0,5	0,5	} Added together	
			0,25	0,25		
			CHISQUARE	1,5		

- Talks to an adviser

Respondent	Answer		Futures	Nonfutures	Total	Percentage	
Futures users	1	5	Observed <3	3	4	7	0,583333333
	2	4	Observed >3	3	2	5	0,416666667
	3	4,5	Sum	6	6	12	
	4	2					
	5	3	EXP <3	3,5	3,5	58% of 6	
	6	1	EXP >3	2,5	2,5	41% of 6	
Non-futures	7	3					
	8	5	o-e < 3	-0,5	0,5		
	9	5	o-e > 3	0,5	-0,5		
	10	1					
	11	3	x^2	0,25	0,25		
	12	3		0,25	0,25		
			0,07142857	0,071428571	} Added together		
			0,1	0,1			
			CHISQUARE	0,342857143			

- Talks to neighbors

Respondent	Answer		Futures	Nonfutures	Total	Percentage	
Futures users	1	1	Observed <3	5	3	8	0,666666667
	2	4	Observed >3	1	3	4	0,333333333
	3	1	Sum	6	6	12	
	4	1					
	5	3	EXP <3	4	4	66% of 6	
	6	1	EXP >3	2	2	33% of 6	
Non-futures	7	2					
	8	5	o-e < 3	1	-1		
	9	4	o-e > 3	-1	1		
	10	1					
	11	3	x^2	1	1		
	12	5		1	1		
				0,25	0,25	} Added together	
				0,5	0,5		
			CHISQUARE	1,5			

- Joining my favourite buyer

Respondent	Answer			Futures	Nonfutures	Total	Percentage
Futures users	1	5	Observed <3	5	5	10	0,833333333
	2	3	Observed >3	1	1	2	0,166666667
	3	1	Sum	6	6	12	
	4	2					
	5	2	EXP <3	5	5	83% of 6	
	6	3	EXP >3	1	1	16% of 6	
Non-futures	7	3					
	8	3	o-e < 3	0	0		
	9	2,5	o-e > 3	0	0		
	10	3					
	11	3	x^2	0	0		
	12	4		0	0		
				0	0	} Added together	
				0	0		
				CHISQUARE	0		

- Same buyer last five years

Respondent	Answer		Futures	Nonfutures	Total	Percentage
Futures users	1	5	Observed <3	4	0	4 0,333333333
	2	5	Observed >3	2	6	8 0,666666667
	3	1	Sum	6	6	12
	4	1				
	5	1	EXP <3	2	2	33% of 6
	6	2	EXP >3	4	4	66% of 6
Non-futures	7	5				
	8	4	o-e < 3	2	-2	
	9	4	o-e > 3	-2	2	
	10	4				
	11	4,5	x^2	4	4	
	12	4		4	4	
				2	2	} Added together
				1	1	
			CHISQUARE	6		

- Sales of grain and rapeseed at spot price during harvest increase the exposure to price fluctuations for my company

Respondent	Answer		Futures	Nonfutures	Total	Percentage
Futures users	1	3	Observed <3	1	0	1 0,083333333
	2	5	Observed >3	5	6	11 0,916666667
	3	5	Sum	6	6	12
	4	5				
	5	5	EXP <3	0,5	0,5	8% of 6
	6	4	EXP >3	5,5	5,5	91% of 6
Non-futures	7	5				
	8	5	o-e < 3	0,5	-0,5	
	9	5	o-e > 3	-0,5	0,5	
	10	5				
	11	5	x^2	0,25	0,25	
	12	4		0,25	0,25	
				0,5	0,5	} Added together
				0,0454545	0,04545455	
			CHISQUARE	1,09090909		

- I believe that it is a competitive advantage to be able to deliver dried goods at a period other than harvest

Respondent	Answer		Futures	Nonfutures	Total	Percentage
Futures users	1	5	Observed <3	0	0	0 0
	2	5	Observed >3	6	6	12 1
	3	5	Sum	6	6	12
	4	5				
	5	5	EXP <3	0	0	0% of 6
	6	4	EXP >3	6	6	100% of 6
Non-futures	7	5				
	8	5	o-e < 3	0	0	
	9	5	o-e > 3	0	0	
	10	5				
	11	5	x^2	0	0	
	12	5		0	0	
				0	0	} Added together
				0	0	
			CHISQUARE	0		

- **I subscribe to one or more different marketing letters**

Respondent	Answer		Futures	Nonfutures	Total	Percentage
Futures users	1	5	Observed <3	2	2	4 0,33333333
	2	5	Observed >3	4	4	8 0,66666667
	3	5	Sum	6	6	12
	4	5				
	5	1	EXP <3	2	2	33% of 6
	6	3	EXP >3	4	4	66% of 6
Non-futures	7	3,5				
	8	4	o-e < 3	0	0	
	9	3	o-e > 3	0	0	
	10	3				
	11	5	x^2	0	0	
	12	5		0	0	
				0	0	} Added together
				0	0	
			CHISQUARE	0		

- **I strive to distribute my contracts equally each year**

Respondent	Answer		Futures	Nonfutures	Total	Percentage
Futures users	1	5	Observed <3	4	5	9 0,75
	2	2	Observed >3	2	1	3 0,25
	3	3	Sum	6	6	12
	4	1				
	5	5	EXP <3	4,5	4,5	75% of 6
	6	1	EXP >3	1,5	1,5	25% of 6
Non-futures	7	1				
	8	4	o-e < 3	-0,5	0,5	
	9	1,5	o-e > 3	0,5	-0,5	
	10	2				
	11	1	x^2	0,25	0,25	
	12	1		0,25	0,25	
				0,0555556	0,0555556	} Added together
				0,1666667	0,1666667	
			CHISQUARE	0,44444444		

- **I always talk with the same company and seller when I sell my harvest**

Respondent	Answer		Futures	Nonfutures	Total	Percentage
Futures users	1	5	Observed <3	1	3	4 0,33333333
	2	4	Observed >3	5	3	8 0,66666667
	3	2	Sum	6	6	12
	4	5				
	5	5	EXP <3	2	2	33% of 6
	6	4	EXP >3	4	4	66% of 6
Non-futures	7	1				
	8	4	o-e < 3	-1	1	
	9	5	o-e > 3	1	-1	
	10	5				
	11	1	x^2	1	1	
	12	1		1	1	
				0,5	0,5	} Added together
				0,25	0,25	
			CHISQUARE	1,5		

- I always call around to most different sellers to see what they can offer me at contracts or prices

Respondent	Answer		Futures	Nonfutures	Total	Percentage	
Futures users	1	5	Observed <3	0	2	2	0,16666667
	2	5	Observed >3	6	4	10	0,83333333
	3	5	Sum	6	6	12	
	4	5					
	5	5	EXP <3	1	1	16% of 6	
	6	4	EXP >3	5	5	83% of 6	
Non-futures	7	1					
	8	4	o-e < 3	-1	1		
	9	4	o-e > 3	1	-1		
	10	3					
	11	5	x^2	1	1		
	12	5		1	1		
				1	1	} Added together	
				0,2	0,2		
			CHISQUARE	2,4			

Appendix 3 – Coding Thematic Words

Group 1

Thematic word	Key-words	Number of farmers
Secure good price	<i>When securing with futures you do not have to fulfill quality criteria</i>	3
	<i>Do not like risks</i>	5
	<i>Important to know the quality</i>	2
	<i>Make security for the future</i>	1
	<i>Trust your stomach feeling than securing prices</i>	2
	<i>Like to secure prices but not if I have to deliver a certain volume</i>	1
Lack of storage	<i>Sells some volume in advance to be sure there is a place for the majority of the harvest</i>	1
	<i>The goal is that the storage should be empty by spring</i>	1
	<i>No storage opportunity</i>	4
	<i>Sells on the spot because of lack of space</i>	5
Follow the market	<i>Want to be a part of the price rising</i>	2
	<i>Aim for the peaks and avoid lows</i>	3
	<i>Do not want to risk not achieve the right quality</i>	3
	<i>Sells when it feels right</i>	2
	<i>Have afford to be a skeptic</i>	3
	<i>Trust your stomach feeling then it is time to sell</i>	4
	<i>Dry it ourselves so we can sell it better</i>	4
	<i>Take samples and know the quality</i>	2
Reduce price variation	<i>Sells several small volumes after harvest</i>	5
	<i>When we dry and storage our harvest we can sell it directly to customers and therefore avoid fluctuations</i>	3
	<i>Following our policy, it reduces the price variation.</i>	1
	<i>Do not want to reach the peak but avoid the lows</i>	3
Policy	<i>Own written policy to secure X% of the expected harvest</i>	3
	<i>The policy is a support, not a bounded alternative</i>	1
	<i>Want the same strategy in the long game</i>	3
	<i>Have an own policy of secure 25% 2 years in advance and 50% 1 year in advance. The remaining part is secured part by part.</i>	1
Risk diversification	<i>Pool can be a good opportunity to not miss a good price period</i>	4
	<i>Spread the risk by doing several strategies</i>	3

	<i>Spread the risk by securing prices several times and at different times during the year</i>	3
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Group 2

Thematic word	Key-words	Number of farmers
Secure good price	<i>Securing the volumes that can not be stored</i>	1
	<i>If the price is good, I secure it</i>	3
	<i>A way of pushing the market</i>	1
	<i>I want to know how much I get paid in advance</i>	2
	<i>Securing prices means lower the risk</i>	4
	<i>Do not like the quality criteria</i>	3
	<i>I work a lot with contracts in general, my best way to survive as a farmer. The farmers who only deliver at the harvest must be extinct.</i>	2
Lack of storage	<i>A big storage facility makes it flexible to adjust to the market</i>	2
	<i>Want to suspend the storage facility</i>	2
	<i>When we lack storage, we sell it at spot price</i>	4
Follow the market	<i>The market decides the prices and I adapt to it</i>	2
	<i>Trust your stomach feeling then it is time to sell</i>	5
	<i>Want to be a part of the price rising</i>	2
	<i>Take samples and know the quality</i>	3
	<i>Read the market</i>	5
Reduce price variation	<i>Do not want to reach the peak but avoid the lows</i>	1
	<i>Sells several small volumes after harvest</i>	2
Policy	<i>No real policy that I follow, but some basic principles</i>	2
	<i>Own written policy to secure X% of the expected harvest</i>	1
	<i>Have to feel that "now is the time"</i>	3
Risk diversification	<i>Strengthen liquidity so you are less vulnerable to lower prices.</i>	1
	<i>Sells sometimes the majority in one time, and sometimes I try to spread the sells</i>	2
	<i>Uses several strategies to diverse</i>	1
	<i>Pool is a good strategy to diversify the risks</i>	2
Reach the peak price	<i>I want to do the opposite with everyone else</i>	2
	<i>Aims to sell when the price is high</i>	3
	<i>As a farmer, you are used to taking high risks, so you would rather take a slightly high risk to earn more.</i>	1

	<i>Storage longer depending on the quality to gain a higher price</i>	1
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Appendix 4 – Coding Futures and Forward Contract

Group 1

Thematic word	Key-words	Number of farmers
Market interest	<i>Futures are transparent and not as slow as the Swedish market</i>	2
	<i>Important with an own picture and knowledge of the market</i>	4
	<i>I try to follow the financial market together with the physical market</i>	1
Standardized contract	<i>Do not like risks</i>	2
	<i>I am skeptical about securing forward contracts on volumes due to the uncertainty in the quality</i>	3
	<i>More security that you can secure a price, but then I also think that it makes you follow the market in a much better way. You have more control</i>	2
Easy to reach average price	<i>With different contracts and strategies, I strive for average prices</i>	4
	<i>Trying to have a structure in it by selling some wheat on the stock exchange on set dates to reach an average price</i>	1
Daily updated by phone message	<i>Nice to get daily messages about current prices. The Physical market is much tougher to get information about prices</i>	4
	<i>Flexible and call into Kalle, he is very good. It's pretty simple.</i>	1
	<i>There it is nice to receive an SMS every day to see what the positions look like. Then you are forced to have an overview of your holdings, a good basis for decision-making.</i>	2
Production risk	<i>The quality is a risk in the production</i>	2
Secure price	<i>It is a risk to storage the harvest if the harvest not is price secured</i>	1
	<i>A written policy that says I should secure some part in futures contracts</i>	3
	<i>Spread the risk</i>	3
	<i>Aim for the peaks</i>	2
	<i>No given strategy, if the price feels right, I sign</i>	4
	<i>Never secure crops that have been sowed in the autumn until I have seen it survived the winter</i>	4

Group 2

Thematic word	Key-words	Number of farmers
Reach my goal anyway	<i>Our strategy is to avoid the dips, I skip the tops and want stable numbers</i>	3
	<i>I want to know what I get paid in advance</i>	1
	<i>Do not like risks</i>	3
	<i>We think our strategy has worked relatively well.</i>	3
Have not started yet	<i>It is not something we have used but we are on our way in there now. Because securing the price of a volume instead of quality is better.</i>	1
	<i>Wanted to start but feel more comfortable with a forward contract</i>	1
Hard to understand/ not enough time/ not my style	<i>I tried to learn everything about futures trading and concluded that this is probably not my thing.</i>	1
	<i>The futures market demand money on the bank that I do not have</i>	2
	<i>He does not use it himself but has taken courses for it.</i>	1
Physical buyer	<i>I am very physical, I want to be able to see someone in the eyes of the person I am selling to.</i>	1
	<i>Sometimes sellers call him when they know he has the item in stock.</i>	1
Local buyers/ branding	<i>We have found a very stable production, which makes it very attractive.</i>	1
	<i>A small mill in the region that we sell to</i>	1
Special contract	<i>Do not send anything without an agreement. Attaches great importance to the design of the contracts.</i>	1
	<i>A special agreement because of the small mill. Storage the sold harvest at the farm.</i>	1
Social capital	<i>It should be nice and accurate. You do not want to do business with a nasty guy.</i>	2
	<i>If you have an understanding trading partner, it can be solved with quality and quantity as there are usually products elsewhere.</i>	2
	<i>The advantages are that you build trust with the person you trade with</i>	1
	<i>It is probably a prerequisite if financial trading is to increase that there must be active futures clubs</i>	1
	<i>Service is also important</i>	1