

MODELLING FARMERS' MARKETING PROCESSES:
THE CASE OF THE POTATO SECTOR IN TURKEY'S ÇORUM PROVINCE

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DECLARATION OF ORIGINALITY

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ABSTRACT

Modelling Farmers' Marketing Processes:

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Many reports and calculations regarding the share of each actor in the final price of agricultural products show that there exists a downward pressure on producer prices. Even if a substantial body of the studies on the Turkish agricultural sector discusses the marketing channels of the producers and states reasons for the low producer prices, they do not construct theoretical models. Other studies consisting of theoretical models are generally conducted in the underdeveloped regions and focus on the effect of price information on the producer prices. This study provides a bargaining model within the two-stage optimization problem of potato producers in Çorum province who sell their products to both traders and the firms based on the information gathered from the interview with 35 potato producers, four traders, two municipal policemen and a manager of the wholesale market. The study aims to find out possible reasons for the downwardly pressured producer prices. According to the results of the model, the difference in the behaviors of familiar and unfamiliar traders regarding the payment process makes the producers dependent on their network and decreases the prices they demand during the bargain to not lose the familiar traders. Also, the model shows that the producer can increase the price he demands by 37.5% in response to a 40% increase in the lower bound of the prices if the average price demanded by other producers increases simultaneously. In the case of a lack of joint action, the response of the producer remains limited at 15%.

ÖZET

Çiftçilerin Pazarlama Süreçlerinin Modellenmesi:

Çorum İli Patates Sektörü Örneği

Her bir aktörün tarımsal ürünlerin nihai fiyatlarındaki payları hakkındaki birçok rapor ve hesaplama üretici fiyatlarının baskılandığını göstermektedir. Türkiye’deki tarım sektörü hakkındaki çalışmaların önemli bir kısmı üreticilerin pazarlama kanallarını ele alsa ve düşük üretici fiyatlarının sebeplerini ortaya koysa da teorik modeller geliştirmemektedirler. Teorik model içeren diğer çalışmalar ise az gelişmiş bölgelerde gerçekleştirilmiş ve fiyat bilgisinin üretici fiyatlarına etkisine odaklanmıştır. Bu çalışma, Çorum ilindeki 35 patates üreticisi, dört tüccar, iki zabıta ve bir hal müdürü ile yapılan mülakatlar esas alınarak hem tacirlere hem de firmalara satış gerçekleştiren patates üreticilerinin iki aşamalı optimizasyon problemi bünyesinde bir pazarlık modeli ortaya koymaktadır. Çalışmanın amacı üretici fiyatlarının baskılanmasının muhtemel nedenlerini tespit etmektir. Modelin çıktılarına göre, tanıdık ve tanıdık olmayan tacirlerin ödeme sürecine ilişkin davranışlarındaki farklılık, üreticileri iletişim ağlarındaki tacirlere bağımlı kılmakta ve tanıdık tacirlerle ilişkisini kaybetmek istemeyen üreticiler, pazarlık sırasında talep ettikleri fiyatları düşürmektedir. Model ayrıca, fiyatların alt sınırındaki %40’lık bir artışa karşılık, diğer üreticilerin talep ettiği ortalama fiyat da arttığı takdirde, üreticinin talep ettiği fiyatı %37,5 oranında artırabileceğini göstermektedir. Ortak hareket edilmediği durumlarda ise, üreticinin fiyat artışına tepkisi %15 artış ile sınırlı kalmaktadır.

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CHAPTER 1

INTRODUCTION

Rural-urban migrations can be observed in all countries during their economic development process. Turkey has a similar experience in terms of rural depopulation. In 1960, only 31.5% of the Turkish population was living in urban areas, but the percentage of the urban population of Turkey has reached to 75.63% in 2019 (World Bank, 2019a). The sectoral distribution of the population can be interpreted as both one of the causes and results of the internal migration. As a matter of fact, the share of the employment in agricultural sector in total employment was about 47.8% in 1991, although it is currently 18.4% (World Bank, 2019b). Thus, it can be inferred that the large part of the population gets further away from the agricultural production process.

Although most of the Turkish population does not produce agricultural foods as seen in the latest numbers above, they continue demanding and consuming them. However, as indicated in the statistics regarding employment in the agricultural sector, less than one-fifth of the Turkish population proceed with production in order to satisfy this demand. On the other hand, the distance between consumers and producers has expanded and the link between them has weakened because of both the current sectoral and regional distribution of the population. At this point, the question of how the provision of the agricultural produces from farmers to the consumers can be achieved comes into prominence.

All of the actors who appear between farmers and consumers such as traders, middlemen, wholesalers, factories, and retailers are called intermediaries (Yazar, 2018). Farmers depend on these intermediaries during the marketing process of the

agricultural products they harvest especially in underdeveloped and developing countries such as sub-Saharan African countries (Hildebrandt, Nyarko, Romagnoli, & Soldani, 2015). Among the intermediaries, traders are the dominant actors in the first stages of the supply chain although farmers think that they offer lower prices (Courtois & Subervie, 2014). Even if there exist alternative channels that link farmers to consumers directly, they are not common in the supply chain of agricultural foods (Bignebat, Koç, & Lemeilleur, 2009). Therefore, most of the farmers have to contact one of the intermediaries in order to sell their products. This necessity makes the intermediaries one of the crucial actors in the supply chain of agricultural foods.

Many academicians state that the gains of the farmers are decreased because of the intermediaries who seek to procure the agricultural products at low prices and trade them at the prices as high as possible (Chigusiwa, Bindu, Muchabaiwa, & Mudavanhu, 2013). Also, several reports about the Turkish agricultural sector mention the lower share of producers in the total revenue. The report prepared by the Turkish Industry and Business Organization emphasizes that the share of producers in total revenue is low and unstable because of the lack of organizational capabilities of producers (Turkish Industry and Business Association, 2020). In another report, producers are described as the weakest actor in the agricultural supply chain and the need for analyses that investigate the links of producers to the market is stressed (Yerküre Yerel Çalışmalar Kooperatifi, 2019).

In addition, a large segment of the society places particular importance on intermediaries in the case of food price increases. This is because of the fact that they are considered as the reason for the difference between producer prices and consumer prices of agricultural foods by society (Hürriyet Gazetesi, 2019). These

considerations reflect on the discourse and policies of the government. The latest example of the reflection was the decision about opening point of sales by two municipalities, Istanbul and Ankara (Deutsche Welle, 2019).

The difference between producer prices and consumer prices can be called as marketing margin. In other words, it is the difference between the prices paid by consumers for the final product and the prices taken by producers at the farm gate (Yazar, 2018). There are many different types of supply chains in the agricultural sector and they can be compared in terms of various perspectives (Kanadalı, 2011). However, most of them have a common characteristic which is that they include more than one actor in the supply chain of agricultural products. Therefore, the total marketing margin of the product is allocated to each actor in different proportions. The Union of Turkish Agricultural Chambers releases monthly reports about the prices of selected agricultural foods in farm gates, wholesale markets, district bazaars, and supermarkets (Union of Turkish Agricultural Chambers, 2020). Although these reports give information about the difference between producer prices and consumer prices, it is not possible to find detailed data about the share of each actor in the marketing margins of selected agricultural foods. Nevertheless, there exist attempts to specify the share of actors and phases in marketing margins of particular foods. For instance, the price formations of tomato, potato, orange, and meat have been calculated and the shares of each stage in the final price have been specified (Koç, 2015). According to Koç (2015), the share of producer prices at the farm gate constitutes only 25% of the final price of potato in 2015. A similar allocation of the marketing margin to the actors can be observed for tomato. The share of tomato producers in the final price has been calculated as 35% by Greenpeace Akdeniz (Yerküre Yerel Çalışmalar Kooperatifi, 2019)

When the monthly price movements of potato for both producers and consumers between 2016 and 2018 represented in Figure 1 are examined, the increasing gap between producer and consumer prices in the case of higher price level draws the attention. The most apparent instances are the price movements realized in the sixth month of 2018 and the fourth month of 2019. Although the consumer price of potato increased by 63% during the sixth month of 2018, the increase in the producer price of potato was only 32% in the same period. The changes in the consumer and producer prices of the potato between February and April in 2019 were 33% and 19%, respectively. These numbers show that even if the consumer prices of potato increase, the change in producer prices of potato is more restricted. In addition, the share of the producer prices in the consumer prices which is represented on the right vertical axis in Figure 1 is 49% on average between 2016 and 2020. The average share mentioned also indicates the existence of the downwardly pressured producer prices throughout the four years.

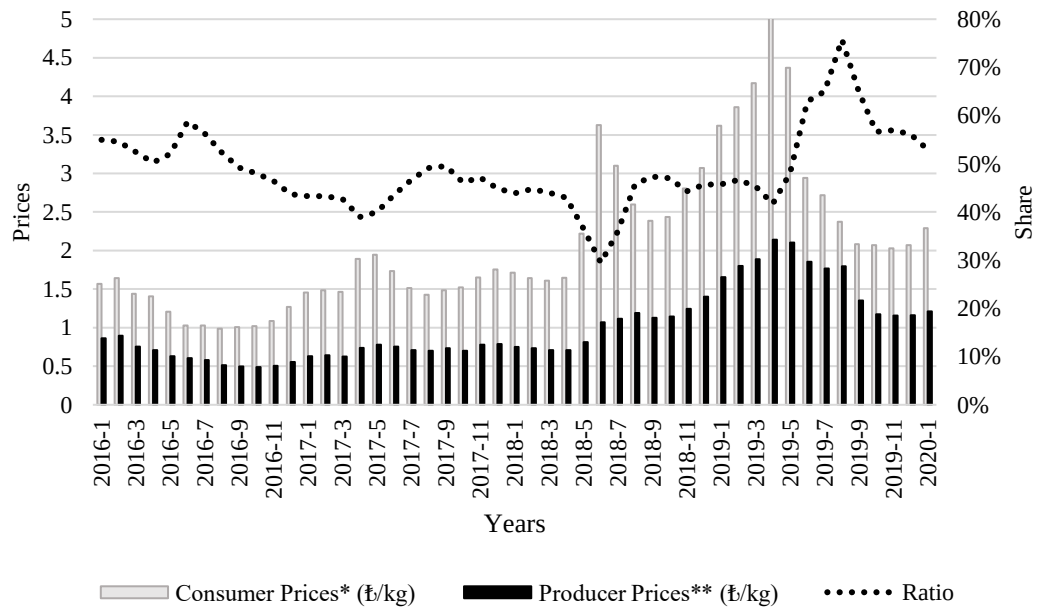


Figure 1. Comparison of consumer and producer prices for potato (₺/kg)
Source: (TurkStat, 2020)

The findings of the reports, the calculations regarding the shares of each agent in the supply chains of various agricultural products, and the data mentioned in the previous paragraphs show that there exists a downward pressure on producer prices to some extent. This inference brings a couple of questions about the formation of producer prices to mind: What are the sales channels available for producers? How do the interactions take place between producers and buyers in each sales channel? Which properties of the sales channels might cause a downward pressure on the producer prices?

In order to answer these questions and related ones, it is necessary to understand the marketing process of producers profoundly. Since every product has different characteristics in terms of seeding, harvesting, storage facilities, and marketing and these characteristics in a particular region may be at variance with another region even for the same product, it is reasonable to narrow down the study to certain province and agricultural food. For these reasons, the marketing process of potato producers in Çorum province is going to be addressed in this study. The main aims are defining the possible sale channels of potato producers, explaining the features of each of them, presenting the interaction between producers and buyers for every sales channel, and finally modeling the bargaining between producers and buyers with the intent to find out possible reasons for the downwardly pressured producer prices.

A model that will be constructed provides a representation of the marketing process of a potato producer and the price formation at the farm gate. By means of the model, different cases can be defined through changes in the parameters that stand for the important determinants of the decision of the producers in the marketing process. Analyzing the response of the producers in the different cases will help us to

find possible reasons that cause downward pressure on the producer prices. Also, as will be discussed in the literature review, this kind of model will be the first attempt for the Turkish agricultural sector, and it will be useful for further research in the field.

The content of the study is as follows. Chapter 2 consists of the literature review and explanations regarding the methodology. In Chapter 3, the process of the fieldwork and the content of the interviews are going to be explained briefly. The information gathered via producers' interviews during the fieldwork constitutes the content of Chapter 4. Sales channels of potato producers in Çorum province and the prominent features of each sales channel are going to be described in Chapter 5 by utilizing the interviews. In Chapter 6, a model for the marketing process of a particular type of potato producers will be constructed and the results of the model through numerical examples will be presented. Finally, the study ends with concluding remarks and policy suggestions in Chapter 7.

CHAPTER 2

LITERATURE REVIEW AND METHODOLOGY

The low bargaining power of producers, downwardly pressured prices at farm gates, the dominance of intermediaries in the trade of agricultural products, and other issues regarding farmers' marketing process can be observed in different countries all over the world. Since the severity of these problems is higher in the under-developed and developing regions, current literature focuses on those regions in order to figure out the possible reasons behind the problems mentioned. In this chapter, the studies whose research questions are related to the marketing process of producers in different countries and consist of theoretical bargaining models will be explored. Also, studies that provide general analyses of both the potato sector and other sectors in Turkey will be discussed in the second subchapter. Finally, the last subchapter includes final remarks regarding the literature and notes on the methodology that will be adopted in the rest of the study.

2.1 Studies consisting of bargaining models

In the first study that will be mentioned under this subchapter, Courtois and Subervie (2014) aim to find the impact of information about the wholesale prices on the bargain between producers and traders, balance of power, and prices at the farm gates. Their study includes two parts: the bargaining model and the quasi-experiment. First of all, they have constructed a two-period bargaining game that starts with the first offer of the trader. If the producer does not accept the first offer, he can go to the wholesale market to sell his harvest or wait for a new offer from the trader. In the second period which starts with the new offer of the trader, the

producer has the same set of actions as in the first period. In this setting, their main aim is to figure out the conditions for the positive effect of the price information provided through market information services (MIS). Therefore, they find the equilibrium for both cases which are with MIS and without MIS. The surprising conclusion they have reached is that the producer can benefit from MIS when the price level is high, but it becomes detrimental for him when the price level is low. According to them, the first part of the conclusion is derived from the fact that traders cannot turn producers' ignorance of market prices into an advantage during the bargaining if producers are informed. The second part of the conclusion can be explained as follows. Producers do not assign positive probability to higher prices when they are informed in the case of low-price levels. Thus, the prices expected by producers decrease and the negotiation ends up with lower prices compared to the case without MIS. However, the presence of MIS prevents the negotiation failures caused by asymmetric information in the case of low-price levels. After the modeling, they make a quasi-experiment using data gathered from the surveys with farmers who produce maize and groundnuts in Northern Ghana in 2009. In this year, producers have experienced higher prices compare to previous years. They estimate the effect of the MIS on the prices paid to farmers at the farm gates by using the experiment. They find that informed producers get higher prices compare to uninformed ones. The effects of MIS on prices for maize and groundnuts are 10% and 7% respectively. Thus, empirical findings support the conclusion of their theoretical bargaining model.

The second study that will be discussed in this part provides an improved version of the model constructed by Courtois and Subervie (2014). Ranjan (2017) constructs a dynamic model where producers take into consideration multiple risks in

the long-term such as middleman-exit-related risk, the risk of drought that causes a decrease in the quality of produces, and risk of future excess supply. Another important contribution of his study is including asymmetric bargaining power to the model. The main goal of his model is to observe the changes in the bargaining strategy of farmers when they face multiple risks and asymmetric bargaining power. Also, the author has investigated the impact of being a member of a producer organization on the bargaining process. The producers in his model have three sales channels: selling to the traders at the farm gates, taking the produces to the central market (it is called mandi in India), and selling in the local market. The producer assigns a price level that is assumed to be taken by the traders during the second sale of the produce. This assumed price constitutes the choice variable of the producer in the maximization problem. After solving the equilibria under different risks considered by the producer, he continues the study with numerical examples for different scenarios where the parameters of the model take different values. The numerical examples suggest that long-term management of the risk of middleman exiting makes the producers more cautious while negotiating with the traders. Therefore, especially the producers in remote locations have to decrease the asking price considering the scenario after middleman exits from the region. If two risks are present at the same time, the optimal strategy indicates lower prices at the farm gates. When bargaining ends up with better prices in a season, the producers decrease the asking prices to moderate the risk of decline in the prices because of the excess supply in the following seasons. Finally, the result of the model regarding the producer organizations shows that the organization could increase the price paid to the producers if the group consisted of the producers is homogenous. Otherwise, a member of the organization who will be affected worse than the other members in

the case of the risk of middleman existing realized may weaken the bargaining power of the organization.

The study of Ranjan (2017) concludes with policy suggestions. Since the producers in remote locations are vulnerable to be exploited by the traders because of the distance between these locations and the central market, their bargaining power is lower than that of producers located closer to the central market. He suggests that storage facilities provided to the producers in remote locations will increase their bargaining power. This is because of the fact that the producers are able to keep their produces a longer time during the negotiation between them and the traders. Another important suggestion in his study is that when producers face prolonged drought, the government should help them to irrigate the lands more efficiently and keep the quality of produces better. Also, during the drought, the government should make easier the way to better-paying markets. Finally, he states that producer organizations should be encouraged in order to increase the bargaining power of the producer, but the homogeneity of the organizations must be established as well.

The following study mainly focuses on asymmetric information between producers and traders. In this study, Mitra, Mookherjee, Torero and Visaria (2018) have examined the effect of informing producers about wholesale prices of potato on the prices paid to them at the farm gates. Their study consists of two parts: the bargaining model with asymmetric information and the econometric analysis based on the experiment conducted in West Bengal, India throughout 11 months from February to November in 2008. At the beginning of the study, they exhibit the margins earned by middlemen in the supply chain. According to their calculation, farmgate prices of potato constitute 44% to 46% of wholesale prices and middlemen gain 50% to 71% of the gap between farmgate prices and wholesale prices. Potato

producers in West Bengal have mainly two sales channels. One of them is to sell to the middlemen coming to their villages (it is called village trader) and the other is to take products to a small market (Haat) in the neighborhood of their villages. As mentioned above, in the first part of their study, Mitra et al. (2018) have constructed a bargaining model in order to explain the effect of information about wholesale prices given to potato producers on the outcome of the bargaining process. The model includes a farmer (F), a village trader (VT), and market traders in Haat and the bargaining process has two stages. In the first stage, VT offers a price and the farmer decides the quantity that will be sold to VT at the price offered. In the second stage, the farmer transports the rest of his products to Haat with an expectation about the price that might be paid by market traders. His expectation of the price is a function of the price level in the central market (Mandi). They apply weak perfect Bayesian equilibrium concept and classify the equilibria based on the degree of informativeness of the price offered by VT for the realization of the price level in the central market. The result of their model shows that informing the farmer about the prices in Mandi does not cause any change in farmgate prices.

In the second part of the study written by Mitra et al. (2018), they have conducted an experiment consisting of randomly selected 72 villages. They divide the villages into three groups and select two of them as treatment groups. The difference between the two treatment groups is the methods used to inform farmers. The first treatment group has taken the information regarding the prices in Haat via telephone calls privately. The second treatment group has been informed with a notice posted in three public places in the villages. The last group has been designated as the control group and the villages in this group have not been informed. Their team had interviews with 24 potato producers in each village once in

two weeks to follow the sale prices paid to them. The econometric model based on the data collected during the fieldwork supports the findings of the theoretical model mentioned in the previous paragraph. Their inference made referring to both models is that whether the producers are informed about the wholesale prices does not lead to a positive effect on the prices paid to them at the farm gates. According to them, the reason is the existence of obstacles that prevent the producers to enter to the wholesale market.

A similar issue regarding the impact of price information on the bargaining between farmers and traders has been investigated for several agricultural products in Ghana by Hildebrandt, Nyarko, Romagnoli, and Soldani (2015). Their study mainly based on econometric models in order to estimate the effect of information on the price levels at the farm gates. However, they have also constructed a bargaining model with asymmetric information to explain the mechanism behind their main argument. Their team conducted an experiment involving 911 farmers in Ghana between 2011 and 2013. In their sample, there are farmers who produce yam, maize, raw cassava, processed cassava, and groundnut but the focus is on the yam sector. They generated a treatment and a control group. Also, they have created a connectedness index for each pair of villages based on whether they use the same market or not, the communication levels of villages to each other, and the distance between villages to check indirect effects from treatment groups to control groups. A management information system operated by a private firm sent short messages consisting of the price of two main products in both local and urban markets to the farmers in the treatment group once a week. Then, the effect of the messages on prices at the farm gates has been estimated under the Stable Unit Treatment Value Assumption (SUTVA). The results under this assumption indicate that the positive

effect of the messages that occur in the first year disappeared in the second year. Hildebrandt et al. (2015) point out information and bargaining spillovers as two possible reasons for the diminishing effect of the treatment since SUTVA implies the absence of impact of a farmers' treatment status on the others. Before examining each spillover effect separately, they figure out the existence of a spillover effect by observing the fact that the villages in the control group which are more connected to the villages in the treatment group are able to take higher price in yam sector. However, this cannot be caused by the information shared with villages in the control group because there is not a statistically significant link between the connectedness index and being awareness of prices in local and urban markets. Therefore, they concentrate on bargaining spillover which means that traders may change their bargaining strategy toward even uninformed farmers because of the possibility that the farmer they encounter during the procurement process is among informed ones.

In the bargaining model constructed by Hildebrandt et al. (2015), there are two types of farmers who are informed and uninformed. Traders do not know the types of the farmers, but they assign a probability that a farmer they encounter is informed. In each stage of the model, farmers and traders bargain for the price. Both farmers and traders can be the proposer of the price. A farmer will accept the offer if it is higher than a threshold which represents the continuation value of the farmer when the bargaining process ends up with a rejection. The key part of the model is related to the optimal strategies of the trader as a proposer. The trader has two optimal strategies regarding his offer. He can apply a pooling strategy and offer a price corresponding to the highest continuation values of the different types of farmers. Also, he can prefer a separating strategy and offer a price corresponding to the lowest continuation values of the different types of farmers. Since the loss caused

by offering the highest continuation value is constant and the loss the trader experiences when he offers the lowest continuation value increases with the probability that the farmer is informed, the trader chooses to offer the highest continuation value when the probability is above a particular threshold. This conclusion indicates the existence of a bargaining spillover because the optimal strategy of traders requires to change their offer toward uninformed farmers as well if the probability is high enough.

In order to test the conclusion of the bargaining model, Hildebrandt et al. (2015) utilize the fact that informed farmers must act toward the offers of the traders in the same way. However, they observe that there exists variation in the timing of the sale preferred by informed farmers. They have built an econometric model and estimated the effect of being in the villages less connected with treatment villages on the timing of the sale. According to the estimation of the model, the coefficient of the value of the connectedness index is statistically significant. It means that traders choose to offer lower prices to informed farmers located in the villages less connected with treatment villages since they assign a lower probability of being informed for those farmers. In conclusion, both bargaining and empirical models show that the reason for the diminishing effect of treatment is mainly caused by bargaining spillover. They conclude their study with an unbiased estimation of the treatment considering the bargaining spillover.

2.2 Studies on Turkish agricultural sector

The status of producers in the supply chains of different agricultural sectors calls researches' attention in academia of Tukey in the manner that the reports mentioned in the introduction give special importance to the issue. Therefore, many of the researchers in the departments of agricultural economics and agricultural engineering

allocate separate chapters to the marketing channels of the producers in their studies. These studies consist of a general analysis of particular agricultural sectors and investigate the sector from production to marketing. In this subchapter, several selected studies regarding both the potato sector and other agricultural sectors in Turkey will be examined.

2.2.1 Studies on the potato sector of Turkey

In the first study that will be mentioned under this part, Karadaş (2000) evaluated potato production in Erzurum province with regards to cost calculation, production function, marketing, and price fluctuations. In this analysis, Karadaş uses primary data gathered from the interviews with 81 potato producers in the region. According to his cost calculation, unit costs of production exceed the unit price of potato in 1999. The unit price constitutes 43% of the unit cost and thus the producers cannot gain profit. Also, the share of producer's prices in the final price was calculated as 53.33%. Another important finding of the study is that potato producers of the province can sell 27% of their harvest to the consumers directly. The remaining part of the harvest has been reached to the consumers through various supply chains that include at least one intermediary.

Another study about the potato sector was conducted in Ödemiş district of İzmir province. İzmir is among the first five provinces with the highest potato production both at the time of the study and today. Özdemir (2003) made interviews with 81 potato producers in the district to analyze the sector in terms of technical and economic aspects of potato production, marketing process, and its problems. She provides detailed data about potato producers in her sample such as socio-economic features, capital structure, modes of producer organizations, variable costs, etc. One

of the conclusions she has reached that the average unit cost of production is higher than the average unit price and the ratio of unit price to unit cost is 0.65 in 2002. Similar to the calculation of Karadaş (2000), Özdemir (2003) also found that potato producers in Ödemiş district cannot gain positive profits. Another conclusion of the study is that 97.7% of potato producers sell their harvest to traders. Özdemir (2003) states that producers do not have alternative marketing channels and the lack of producer organizations makes the marketing problems unsolvable. Finally, producer prices correspond to 45.2% of the prices paid by consumers according to her calculation in 2002.

Nevşehir that is in sixth place in terms of potato production was also considered in the literature. Intending to identify problems in all stages of production and marketing, Yücel (2019) had interviews face to face with 156 farmers and asked 62 questions. The farmers who generally produce potato because of the absence of alternative products state that potato production does not yield a profit. Moreover, 28.2% of farmers in the sample confirm that potato production causes them to increase their debt burdens. The ratio of farmers who sell their harvest to traders is 69.9%. As shared by Yücel (2019), the lack of producer organization prevents farmers to be active in the marketing phase and to take profits that farmers deserve. The study ends with policy recommendations such as establishing a producer organization and an exchange market for potato, decreasing the cost of inputs, promoting local seed production and contract farming.

2.2.2 Studies on other agricultural products in Turkey

Similar to the analyses carried out for the potato sector of Turkey shared in the previous subchapter, there also exist studies that evaluate the other agricultural

sectors and livestock sector in Turkey (Yazar, 2018; Özger, 2018). The approach used in these studies is identical to that of previous ones regarding the potato sector. Two selected studies on two agricultural products other than the potato sector have been discussed below.

Apart from potato, the first agricultural product whose marketing process will be considered is almond. Yazar (2018) analyses the almond sector of the East Mediterranean Region in terms of production and marketing structure. She has collected primary data through interviews with 100 producers, eight intermediaries, four retailers, and two almond processing plants. For two types of almond produced by farmers in the region, unripe almond, and unshelled almond, the share of producers in the sample who use each marketing channel is specified. The summary of findings regarding the marketing channels for two types of almond is presented in two different diagrams. The dominance of intermediaries in trade with producers for both types of almond draws the attention. While producers of unripe almond sell 82% of their products to the intermediaries, the producers of unshelled almond sell 94% of their harvest. The share of producers' prices in the final price of almond differs between 58% and 65% for different kinds of almonds. According to the response of farmers who attended the interview, the main problems faced by them are low prices, lack of storage facilities, absence of alternative sales channels except for intermediaries, and the debt burden that forces farmers' hand to sell their products immediately after the harvest.

It can be observed similar concerns of producers in the livestock sector. Özger (2018) who has examined buffalo breeding activities in Iğdır province from the point of inputs, application times, costs, production, and marketing conducted surveys with 92 enterprises in the sector. One of the findings of his works is that

most of the producers sell the milk obtained from buffaloes to the intermediaries in the supply chain. Also, he classifies the problems of producers in four parts: problems related to government policies, lack of technical information, production and marketing problems, and the high cost of inputs. Under the third category, low prices of milk come into prominence.

2.3 Final remarks and the methodology

Among the studies conducted in the different parts of the world, Ranjan (2017) mentions the exploitation of the farmers in remote locations by traders. Mitra et al. (2018) have calculated that potato prices at the farmgate constitute 44% to 46% of wholesale prices and middlemen gain 50% to 71% of the gap between prices at the farmgate and wholesale prices. Also, regardless of the regions and the agricultural products, the studies conducted in Turkey show that the most important actor in the transactions between producers and buyers is traders or intermediaries. It is obvious in those studies that the unit cost of production is higher than the unit price paid to producers and the share of producer prices in the final price paid by consumers is restricted and differs between 45% and 53%. These calculations coincide with the comparison of producer and consumer prices for the potato sector in Figure 1 shared in the introduction. When it comes to problems faced by producers, low prices caused by lack of alternative marketing channels, absence of producer organization, etc. come into prominence. Despite all these observations and calculations, farmers continue to sell their products to traders and middlemen. The following study, which was jointly written by Abebe, Bijman, and Royer tries to find the determinants behind this phenomenon.

Abebe, Bijman, and Royer (2016) have two main aims in their study. First of them is finding the factors that lead farmers to work with middlemen. The second aim of the study is figuring out the impact of this decision on the income of the farmers and the commercialization process. They have made surveys with 345 potato producers in Ethiopia in 2011. In order to estimate the statistically significant factors, they constructed a probit model. Unlike the other studies, they add variables such as ethnic and religious ties, age and education level, access to information along with transaction costs, risk preferences, asset holdings, and geography which are common in the literature. According to the results of the probit model, age, education, farm size, wealth and location, ethnic and religious ties are the most effective determinants of the decision regarding sales through middlemen. While age, education, ethnic, and religious ties positively affect the probability of working with middlemen, the coefficient of the variable representing the farm size is negative. Another result they have reached through gross profit analysis is that farmers who do not sell to any intermediaries have 225% higher gross profit compare to those who are working with middlemen.

The studies conducted in Turkey mainly compose of the fieldwork on the selected regions and products. They provide findings about the problems of producers and detailed data related to each stage of production and marketing. Unlike the other studies that consist of either theoretical or econometric models, the interpretations in those studies based on the information gathered via interviews have not been supported by any models that explain the marketing process, bargaining between producers and buyers, or formation of prices at the farm gate. Therefore, this study will attempt to construct a theoretical model in order to fill the gap in the literature about the Turkish Agricultural Sector.

In line with the studies in the literature, this study follows a similar methodology. Firstly, interviews with different actors in the agricultural supply chain of the potato sector in Çorum province will be made. Although the questions of the producers' interviews have been prepared beforehand and thus, they are structured interviews, the interviews that are going to be made with other actors will be in a semi-structured form.

The information gathered from the interviews is going to be analyzed and descriptive statistics will be presented. In this phase of the study, sales channels of potato producers in Çorum province will be investigated with particular attention. Based on the analyses and the investigations, a two-stage optimization problem for the producer who uses two sales channels (selling to firms under contract farming and traders) will be constructed. For the second stage of the optimization problem, an asymmetry in bargaining power will be introduced to the model. Thus, the Nash bargaining model under asymmetry will be used (Binmore, Rubinstein, & Wolinsky, 1986). Also, the conceptualization and notations of Ranjan will be adopted (Ranjan, 2017). Finally, the outcomes of the models in each stage will be analyzed through numerical examples where the parameters of the model take different values for various cases.

CHAPTER 3

FIELD WORK AND INTERVIEWS

There are 71 provinces where potato is produced in Turkey. It means that there exists potato production in almost every city of Turkey. Çorum province which was selected as the field of the study has been among the first 20 provinces for the last five years in terms of potato production. The average yearly potato production of Çorum province in the last five years is 38,641 tonnes. 66% of the total potato production occurs in the villages within the borders of the central district according to the average of the production in the last five years (Turkish Statistical Institute, 2019a). In addition, Eraslan (2009) states that the villages in her study conducted in 2009 are the most prominent ones in terms of potato production in Çorum province based on the data provided by the statistics department of the Provincial Directorate of Agriculture and Forestry in Çorum. When the villages in her study are considered, it will be observed that the majority of them are located in the central district of Çorum province. Along with statistics regarding the potato production in Çorum province, the fact that the central district has increased its potato production approximately three times since 2009 indicates that potato production in Çorum province is concentrated in the villages of the central district.

In this chapter, along with the process of fieldwork, the content of interviews with potato producers, traders/commissioners, the manager of the wholesale market, and municipal policemen working for the wholesale market have been explained. The findings of the producers' interview will be discussed in Chapter 4. The information gathered from the answers of other interviewees will be employed in relevant parts throughout the study.

In order to understand the marketing process of potato producers in Çorum province, it is reasonable to pose questions about the process to farmers especially. Therefore, interviews for the potato produces was prepared in the first stage. The questions of the producers' interview can be found in Appendix A. The producers' interview consists of five parts:

- i. Demographic information,
- ii. Characteristics of the agribusinesses,
- iii. Seeding and harvesting process,
- iv. Sales process and price formation,
- v. Costs and financing.

In the first part, information related to age, education, marital status, size of the household, and the district where the producer lives and cultivates was collected. The second part of the interview aims to obtain information about the experience of the producer in agriculture, other sources of income, the total size of lands cultivated by the producer, the ownership status of the lands, the shares of the lands that were allocated for potato cultivation in the last three years, the factors considered by the producer while deciding the share of the lands that will be used for cultivation of each agricultural product, membership status to any of agricultural cooperatives or producer's unions. The provision of inputs, types of production – i.e. production for the market, industry, or seed – harvesting process and storage facilities constitute main topics that are interested in the third part of the producer's interview. The questions of the fourth part are related to sales channels, the frequency of changes in buyers, bargaining, price formation at the farm gate, payment process, the sources of information about farm gate, wholesale or retail prices, and the degree of information asymmetry among actors. Finally, the fifth part consists of questions about costs, the

methods of finance used by producers, indebtedness, and the subsidies of government they utilized from.

One of the private agricultural consultancy firm located in Çorum province has assisted in order to reach farmers who produce potato in Çorum province. The total number of potato producers who attended the interview is 35. The interviews have realized face to face with 90% of the producers in the sample. The other producers were contacted via telephone calls. Since potato production is concentrated in the villages within the borders of the central district of Çorum province as mentioned at beginning of this chapter, 82.85% of respondents in the sample have agricultural lands in those villages and close connections with the city center. The consistency between the distribution of the villages where potato is produced in Çorum province and the selected villages for the study makes the representativeness of the potato producers in those villages adequately strong.

The interview prepared for traders/commissioners who deal with potato trade consists of five parts similar to the producers' interview. The traders' interview can be found in Appendix A as well. Nevertheless, the parts of the interview and their contents are provided briefly as follows:

- i. Demographic information,
- ii. Characteristics of the commercial activities,
- iii. Procurement of potatoes and price formation at farm gates,
- iv. Sales process and formation of wholesale prices,
- v. Costs and financing.

In the first part of the traders' interview, information related to age, education, marital status, size of the household, and the district where the trader/commissioner lives were collected. The second part of the interview aims to

obtain information about the experience of the trader, whether the trader is operating in the wholesale market or not, the other products which are traded by the trader, other sources of income, membership status to any of professional association. The procurement process of potatoes, the ways used by the trader to reach to potato producers, bargaining, price formation at farm gates, payment process and the factors the trader considers while deciding which farmers he will work with constitute main topics that are interested in the third part of the traders' interview. The questions of the fourth part are related to sales channels, the factors the trader considers while deciding which buyers he will work with, the frequency of changes in buyers, bargaining and formation of wholesale prices, payment process, storage facilities of the trader, etc. Finally, the fifth part consists of questions about taxes, costs, and the methods of finance used by traders.

The same private agricultural consultancy firm and the wholesale market of Çorum province that is governed by the provincial municipality are the main channels of communication with traders. While the consultancy firm has provided information about the traders coming from outside the province, the wholesale market has been visited in order to reach to the traders who have workplace inside of the wholesale market of Çorum province. Since there is no convincing evidence that shows the existence of traders operating outside the wholesale market even if they are from Çorum, there are no such traders among respondents of the interview. The total number of traders who attended the interview is four. Two of them are working in the wholesale market of Çorum province and others are coming from the wholesale markets of other provinces. The interviews with the traders in the wholesale market of Çorum province were made face to face. The traders coming from the wholesale markets of other provinces were contacted via telephone calls.

Since many of the producers do not want to share the contact information of the traders they work with because of the ethical concerns, the number of traders' interviews remained low. However, information gathered from these interviews was confirmed by the interviews with farmers, the manager of the wholesale market, and municipal policemen working for the wholesale market.

The interviews prepared for the manager of the wholesale market and municipal policemen working for the wholesale market are semi-structured in contrast to those for producers and traders/commissioners. Therefore, the questions that were asked to them have not been precisely written beforehand. The main aim of these interviews is to learn the difference between legislative regulations and the de facto system. The main topics talked about during the interview with the manager of the wholesale market are listed below:

- Current Wholesale Market Act,
- The problems faced while implementing the Wholesale Market Act,
- The structure of the wholesale market,
- The organization of marketplaces in the province,
- Taxes collected by the Municipality,
- The manner adopted by the producers, the traders/commissioners, and other actors towards the regulations,
- Suggestions to solve current problems and establishing a more ideal system.

Although the regulations are the primary focus of the interview with the manager of the wholesale market, the issues related to the implementation process of the regulations and the relationship between actors in the field were discussed with municipal policemen working for the wholesale market. The main agenda items of the semi-structured interview of the municipal policemen is as follows:

- Job descriptions and the realm of authority,
- Fines imposed on the actions in contravention of the regulations,
- The problems faced during supervisions,
- The methods applied by the actors to bend the rules,
- The relationship between stallholders and traders in the wholesale market,
- The relationship between producers and traders in the wholesale market,
- Suggestions for solving current problems and establishing a more ideal system.

As mentioned above, the findings of the interviews with traders/commissioners, the manager of the wholesale market, and municipal policemen working for the wholesale market will be employed in relevant parts throughout the study as an additional source of information. Since the main focus of the study is the sales channels of the potato producers in Çorum province and the price formation at the farm gates, the answers of the producers will be examined in the following chapter in order to understand the decision processes of the potato producers and main characteristics of the potato production.

CHAPTER 4

DESCRIPTIVE STATISTICS

In this chapter, the information gathered from the interviews, especially with potato producers, are summarized. While providing descriptive statistics about the producers, the order of the context of the interviews mentioned in the previous chapter will be followed.

4.1 Demographic statistics

As stated before, the total number of potato producers who attended the interview is 35. The regional distribution of the producers in the sample can be seen in Table 1 below.

Table 1. Regional Distribution of Potato Producers in the Sample

Districts	Central District							Alaca	İskilip	Laçın
Villages	Deliler	Ömerbey	Karabürçek	Bozboğa	Celilkırı	Karaca	Pınarcık	Hüyük	Karagöz	Kavaklıçiftlik
#	9	6	4	3	3	2	2	3	2	1
Total	29 (82.85%)							6 (17.15%)		

Table 1 shows that 82.85% of the respondents produce potatoes in the villages located in the Central District of Çorum province. The remaining part of the producers is from other districts of the province: Alaca, İskilip, and Laçın. This

distribution almost reflects the share of the districts in the total annual production. It can be seen the average shares of each district in the annual potato production for the last five years in Figure 2. The Central District has 65.84% of the total annual production. Alaca comes after the Central District with the share 14.69 and İskilip is in fifth place in terms of annual potato production.

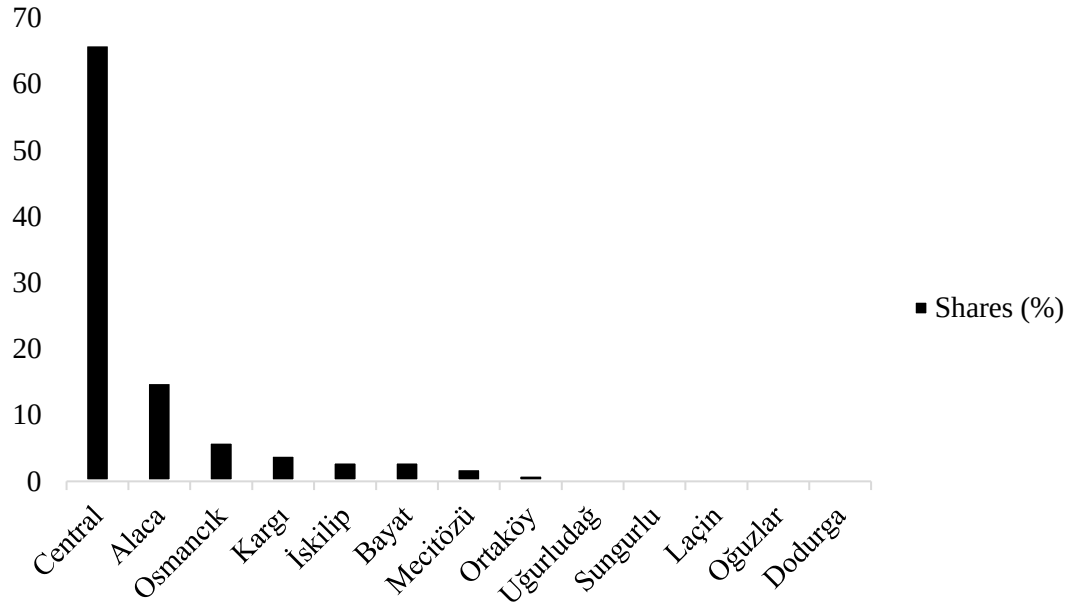


Figure 2. Shares of districts in annual average potato production (2015-2019)
Source: (TurkStat, 2019)

In terms of demographic characteristics, information about age, education, marital status, and the number of people in the household were requested from the producers in the sample. The average age of the producers in the sample is 41.7. As it is expected, their average age is above the median age of the Turkish population that was 32.4 in 2019 (TurkStat, 2019b). In Table 2, the age distribution is summarized. Almost 70% of the producers fall into the age range between 31 and 60.

Education levels of the producers in the sample also coincide with the common knowledge we have. As shown in Table 3, only 9% of the producers in the sample graduated from a university. The majority of them had an education until primary or secondary schools.

Table 2. Age Distribution of the Producers in the Sample

Age	#	%
[18-30]	7	20%
[31-45]	14	40%
[45-60]	10	29%
>60	4	11%
Total	35	100%

Table 3. Education Levels of the Producers in the Sample

Education	#	%
University	3	9%
High School	9	26%
Secondary School	7	20%
Primary School	16	46%
Total	35	100%

When marital statuses of the producers in the sample are considered, it is observed that 86% of them are married and the remaining part is single. In Table 4, producers are classified according to the size of the household. The size of the household is important for producers because members of the household who are capable to work with the head of the household in the agricultural lands may ease the workload in all processes during seedtime, harvesting, and marketing. For instance, the heads of households who manage the agricultural lands larger than 250 decares live with 4.6 people on average. On the other, the owners of agricultural lands smaller than 250 decares have 3.8 people on average at their households. Even if it is hard to decide the direction of causality, it can be said that there is a link between the size of the household and the size of agricultural land managed by the head of the

household. In addition, the size of the households of the producers stating that at least one of their family members help them in the production process is 5.8 on average while the size of the household of producers working without help of other members in the household is 3.4 on average.

Table 4. The Size of the Household

Size of Household	#	%
>5	4	11%
5	5	14%
4	12	34%
3	7	20%
2	3	9%
Solitary	4	11%
Total	35	100%

4.2 Characteristics of the agribusiness

The questions related to the agribusinesses and ownership status of lands start with examining their experience in agricultural production. According to the answers of the producers in the sample, 96% of them have learned farming from their fathers and they have been working in this sector since their childhoods. The remaining part of them has become producers even if their fathers were not farmers. The other important question in the part is about the alternative sources of income of the producers. Their responses are summarized in Table 5 below. The majority of the producers in the sample do not have any income sources in addition to agricultural production. The most common alternative source of income is livestock farming. Whether there is an alternative occupation or not affects the financial situations of potato producers especially in the case of unexpected negative shocks such as natural disasters, sudden decrease in prices, change in foreign trade policies, and so on. In

those cases, the producers who gain income only from agricultural production face a significant decrease in their incomes and need to apply to different financial sources in order to maintain their agribusinesses. On the other hand, the other producers who have an alternative source of income can recover from the negative effects of the shocks thanks to gains from their secondary occupation.

Table 5. The Sources of Alternative Incomes of Producers in the Sample

Alternative Occupation	#	%
None	22	63%
Livestock Farming	9	26%
Part-time Jobs	2	6%
Factory Laborer	2	6%

It can be claimed that having a secondary occupation may make difficult to manage both responsibilities and thus the producers who have an additional occupation might produce in a smaller size of land. The counterclaim is that the producers who gain income from different sources might be more resistant to negative shocks mentioned above and consequently, they are eligible to maintain a bigger size of land. When we look at the average size of lands managed by four different types of producers classified according to their alternative occupations, it is shown that the producers who conduct livestock farming as a secondary occupation have the biggest average size of agricultural land (558 decares). The average size of land managed by other types of producers can be seen in Table 6.

As in the relation between the size of the household and the size of agricultural land managed by the head of the household discussed above, the direction causality, in this case, is also ambiguous. As a matter of fact, having a bigger size of agricultural land may lead to accumulating capital and the producer

can undertake livestock farming by using this capital. It is better to conclude by emphasizing the link between alternative occupations and the size of agricultural land and keep in mind both possibilities for the direction of causality. It is necessary to examine this phenomenon with enough data and analytical tools in order to figure out which interpretation is valid.

Table 6. Average Size of Agricultural Lands Managed by Different Types of Producers Classified by Alternative Occupation

Alternative Occupation	Average Size of Agricultural Lands (decare)
Livestock Farming	558
None	236
Part-time Jobs	200
Factory Laborer	70

The average size of agricultural lands managed by potato producers in general and without any classification is 303 decares. However, it cannot be said that ownership of all these lands belongs to the producers who cultivate them. At this point, it is better to mention the types of ownership status of agricultural lands. They can be divided into three parts: full ownership, rented, partnership. Even if the first two ones are clear, the third one can be defined as follows. In the context of agricultural production, the partnership represents an informal agreement between two or more producers for a joint production in which all responsibilities in terms of costs and inputs, and shares in the total yield are predefined. It is a considerably flexible concept and can be designed in various forms according to the agreement between producers.

When we examine the ownership status of agricultural lands according to the responses of producers in the sample, it is observed that producers own 41% of the total size of lands they cultivate on average. The remaining parts of the lands are

either rented or managed by a partnership. In Figure 3, you can see the positions of the producers in terms of the share of agricultural lands owned by them in the total size of lands they cultivate.

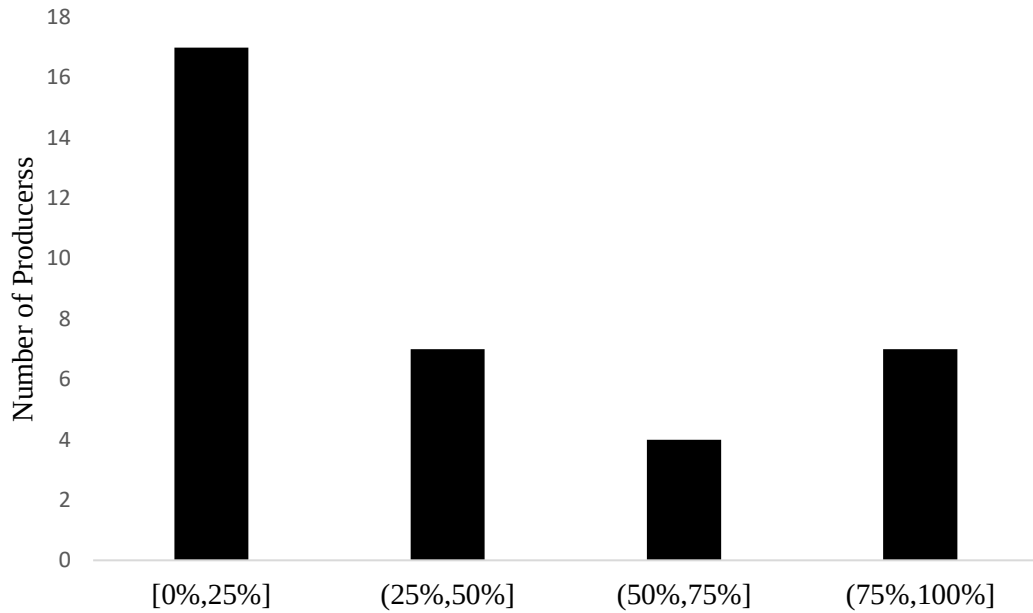


Figure 3. Share of lands owned by producers in total size of agricultural lands

It must be noted that renting is more common than partnerships for the remaining parts of the agricultural lands. Only 11% of the total size of agricultural lands are cultivated lands with the partnership on average. Thus, rented agricultural lands occupy a significant place in agricultural production for potato producers in Çorum province. By percentage, it corresponds to 48% of the total size of agricultural lands managed by each producer on average. When it is considered the results of the latest surveys made by TSI, we can see that this phenomenon is present for other parts of Turkey in general. According to the results in the Agricultural Holdings Structure Survey conducted in 2016 by TSI, more than 40 decares of every 100 decares are cultivated by producers other than the real owners of the lands through renting or similar means (Özkuş, 2018).

If the producers are positioned in sets established according to their ownership status in the agricultural lands they cultivate, the number of producers in each set would be as in Figure 4. As you can see that the ownership status of 75% of producers is not monotype since there are five producers who cultivate only their own agricultural lands and four producers who cultivate only rented agricultural lands. The most common ownership status is being a renter with 30 producers, in other words, 86% of all producers in the sample.

Renting can be done with either official rental contracts or informal agreements between owner and renter. If a producer cultivates rented agricultural lands with official rental contracts, he can submit his production to Farmer Registration System and utilize subsidies of government. Otherwise, he must produce without subsidies utilized by himself and any registration on its behalf. In the second case, the owner may prefer to submit the production in his land on its behalf and can take the subsidies. The last possibility is that production takes place without any registration neither by renter nor by owner. In addition, production without submitting to Farmer Registration System can cause problems in the transportation of products to wholesale markets or marketplaces. This problem is present especially for intercity transportation because there are some control points in the entrance of the cities and a producer who carries potato without any registered potato production might be fined.

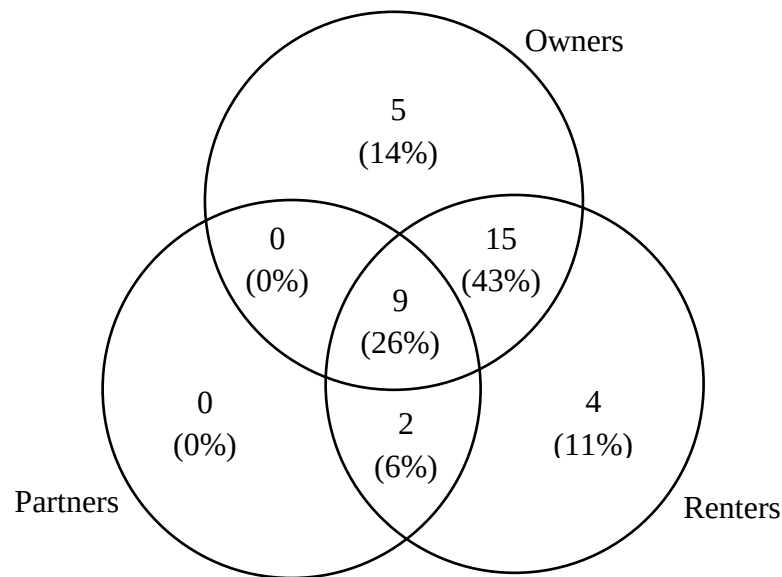


Figure 4. Type of producers according to their ownership status in the agricultural lands they cultivate

As stated above, 86% of producers cultivate rented agricultural lands. When they are asked whether they have official rental contracts or not, 58% of these producers answered the question negatively. So, more than half of producers in the sample who use rented lands do not have official rental contracts. There are two possible reasons behind this phenomenon mentioned by the producers. The first reason is agricultural lands divided among more than one successor. Since reaching all of them is not easy, producers prefer to contact one of them and make an informal agreement with him to rent the land. The second reason is that some of the owners of lands lay down taking subsidies on its behalf as a condition of renting. Thus, producers do not have any option except obeying this condition and make an informal agreement with him. In the second case, by contrast with the first case, the production is submitted to Farmer Registration System even if it is in the owner's name.

The issue of whether the renting of agricultural land is official or not is crucial for the producers because they cannot take subsidies for their production in rented lands if they do not submit this production to Farmer Registration System. As

will be discussed in detail while presenting descriptive statistics related to the financial status of the potato producers, losing one of the financial supports such as subsidies will directly decrease producers' profit and welfare.

Even if the potato is one of the main types of agricultural product for the producers who attended the interview, they produce and sell other agricultural products. 88% of them produce at least one different type of agricultural products either in the same lands after harvesting potato or in different agricultural land they manage. In Figure 5, there are the most common secondary products for potato producers in the sample. Since producing a type of agricultural product requires to have knowledge and experience, potato producers do not prefer so many different types of agricultural products in general.

Similar to the effect of additional sources of income, diversity in agricultural products is important especially in the case of a sudden decrease in price or change in foreign trade policies for one of the agricultural products harvested by producers. The producers who have only one type of agricultural product may face financial problems when its price realized lower than what is expected. In those cases, they either apply different ways of borrowing or have to decrease production in the next year because of the lack of income.

In order to figure out the share of potato production in the total size of agricultural lands managed by producers, they were asked the size of lands allocated for potato production in the last three years. Since producers could not remember the precise size for each year and there is not considerable variance year by year, it was preferred to use last three-years' average size of agricultural lands allocated for potato production for interpretation. As a result, potato producers in Çorum province allocate 25% of the total size of lands they manage for potato production on average.

Thus, most of the producers in the sample are not dependent on only potato production to earn income. However, it can be said that earnings from potato production correspond to a substantial part of their total income considering their opinion that potato production is relatively more profitable than that of other agricultural products.

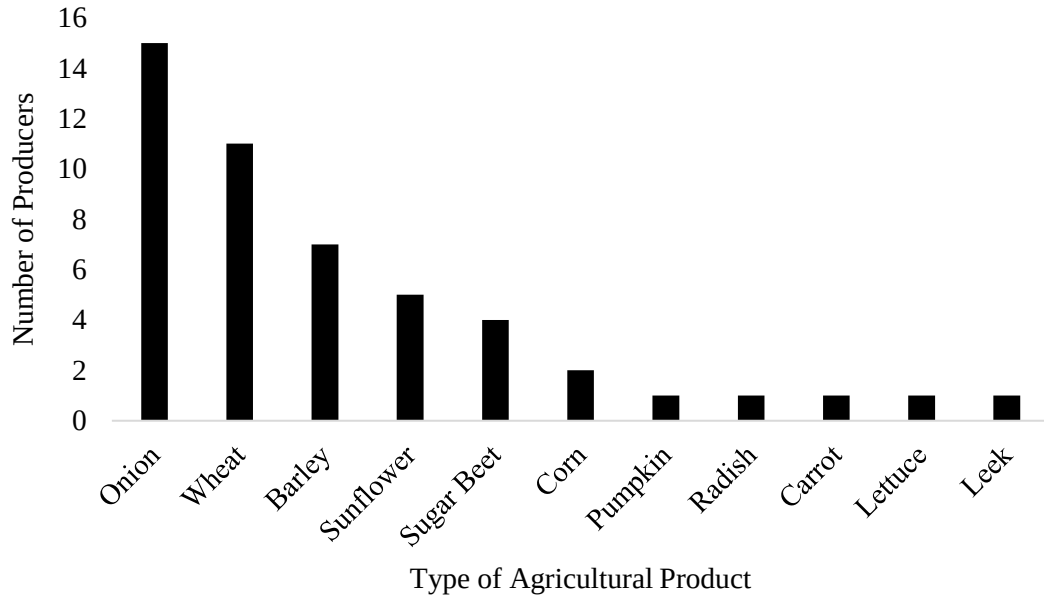


Figure 5. The most common secondary agricultural products for potato producers

As stated above, there is no considerable variance in the size of agricultural lands allocated for potato production from year to year. However, it is necessary to ask the factors considered by the producers while making production decisions with the aim of the understanding low level of variance in production. The factors mentioned by the producers in the sample are listed in Figure 6 according to their frequency.

As you see that demand for potato seed at the beginning of a current year comes in the first place as a determinant of production decisions. Most of the producers contact other producers both in Çorum and different provinces, traders, or seed dealers especially in the regions where the majority of seed sales realize. The

producers gather information about the state of seed sales to estimate the expected size of lands allocated for potato production in the current year. If the demand for potato seeds is high and its price is increasing, the producers understand that there will be an increase in the size of agricultural lands allocated for potato production throughout Turkey. Since they expect a decrease in prices because of the increase in supply based on the information they gathered from seed dealers, they may prefer to decrease potato production and tend to produce other agricultural products.

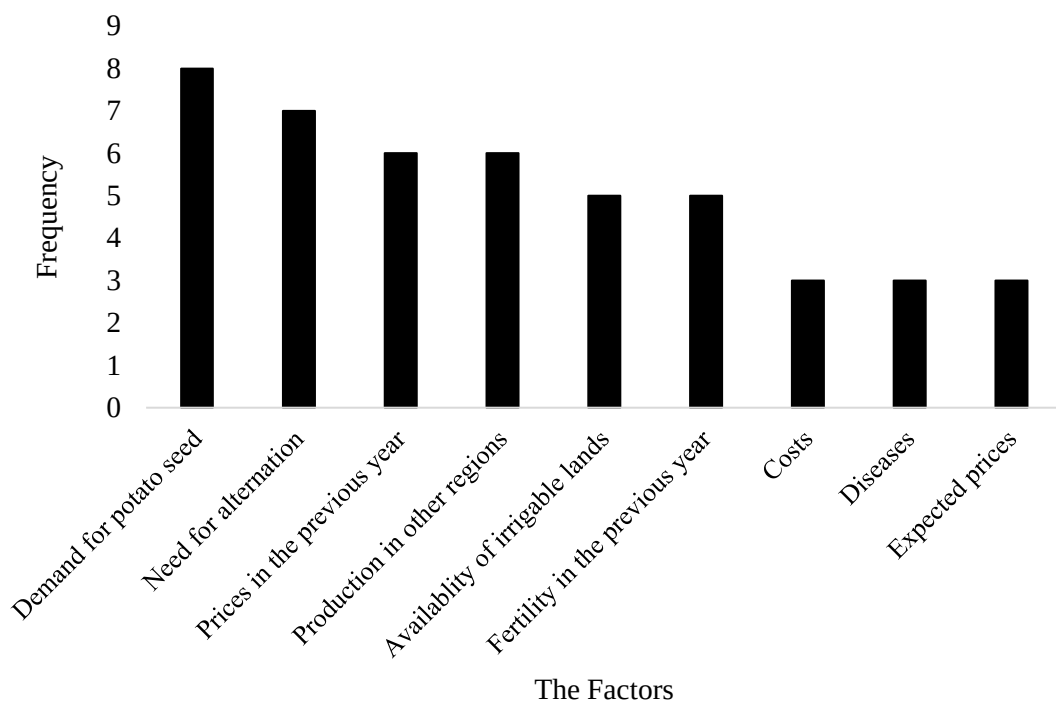


Figure 6. The factors considered by the producers during production decisions

The second important factor in production decisions is the need for alternation. The production of potatoes in the same agricultural land without alternation may cause some problems such as an increase in diseases and low fertility. The optimal time for alternation is cultivating the land for potato production once every three years. However, it cannot be said that all producers observe the optimal time. According to the answers of the producers in the sample, they generally use the same agricultural land for potato production once in two years.

Thirdly, we observed that prices in the previous year are important for the production decisions in the current year. Also, there is one more factor related to price levels in the list called expected prices even if its frequency is low compared to other determinants. These two determinants are connected to a well-known theory called the Cobweb model presented by Nicholas Kaldor. The model is valid for especially some product markets where the producers have to decide the supply without knowing the exact prices. In all types of outcomes of the model, the emphasis is that a time difference between production decisions and sales in the market may cause cycles around the equilibrium points. It is because of the fact that the producers expect that the price levels in the previous year will continue in the next year and they make production decisions according to this expectation. This phenomenon is present for most of the agricultural products since farmers cultivate their agricultural lands before the realization of prices. Therefore, Kaldor uses robber and corn as examples while explaining his model (Kaldor, 1934).

The fact that potato producers consider the prices in the previous year and the expected price for the next season while deciding the size of agricultural lands allocated for potato production brings the possibility of the cycles asserted in Cobweb models to mind. Even if there is not enough data to examine this possibility for the producers in Çorum province, the previous works that investigate the Cobweb theory for the potato sector in Turkey can give an idea. Kaya wants to figure out the relation between potato production and its price for Turkey between 1984-2013 and to test Cobweb theory which suggests that the size of production follows the price levels with one year lagged. She reaches two different findings depending upon two different models she used. While she finds that potato prices in the last three seasons are positively related to potato production in the current year by using the Koyck

model, the findings of the Almon Model show that Cobweb theory is not valid for potato sector of Turkey (Kaya, 2015).

Another study that investigates the relationship between the supply of agricultural products and their prices focus on five different products (wheat, chickpea, sunflower, potato, sugar beet) for TR83 region of Turkey consisting Samsun, Tokat, Çorum, Amasya provinces. In this study, Gürleyen examines trend analysis of prices and the amount of production for each agricultural product between 1997 and 2016. Then, he forecasts the prices and production levels of each product for the next 5 years. Additionally, he estimates the effect of various independent variables such as real prices of the preferred product in the previous year, real prices of the other agricultural product that farmers may replace the preferred product with, prices of diesel fuel, etc. on the supply of each agricultural product as the dependent variable. According to the result of the forecast related potato produced in Çorum province, it is observed that both prices and amount of production is expected to increase during the next five years (2017-2021). So, there exists a co-movement of price and supply of potato in Çorum. When we look at the estimated coefficient of the independent variable that represents the price of potato in the previous year, it can be said that potato prices in the previous year positively affects the supply of potato in the current year. One percent increase in the independent variable mentioned causes a 0.43 percent increase in the supply of potato (Gürleyen, 2018).

In conclusion, it is obvious that potato producers in Çorum province consider the prices in the previous year and the expected prices for the next year while making production decisions. Even if these are not the only determinants of the size of production as depicted in Figure 6, potato producers are partially inclined to increase

the size of agricultural lands allocated for potato production when they experienced high prices in the previous season. Also, they may prefer to decrease potato production when they were not satisfied with prices of the last year. Even if the empirical studies are not common especially for potato sector in Çorum province, two study summarized above support the conclusion we reach in terms of the relationship between price levels in the previous year and the amount of production in the current year.

The last question of the second part of the producers' interview consisting of issues related to the agribusinesses and ownership status of lands is about the membership status of potato producers in a producers' union. There is some information in the local newspapers about the presence of a producers' union for the potato sector in Çorum province. However, there is no detailed news about when the union called Çorum Potato Producers Association has been established. Based on a piece of local news, we can say that they meet and hold elections periodically (Çorum Haber, 2014). According to the other news, the Association has 70 members among 500 potato producers of Çorum province in 2015 (Çorum Provincial Directorate of Agriculture and Forestry, 2015). When we look at the answers of potato producers in the sample related to their membership status in the Association, it is observed that only 12% of the producers are registered to the Association. Since there is not another union except the one mentioned above, the remaining part of the producers is not a member of a union.

The producers who are registered to Çorum Potato Producers Association were also asked about their opinion about the union and its benefits to them. The most common answer to these questions is that the Association is not working efficiently. Also, some of them are in doubt about the corruption within the

Association. Most of them are not fully aware of what the Association is doing currently. Based on the information in local newspapers and the comment of the producers, it can be concluded that even if there exists a producers' union in Çorum province, it does not work properly and does not have a positive contribution to its members.

4.3 Seeding and harvesting process

In the second part of the producers' interview, the land structure of the agribusinesses in terms of size and ownership status was explained. Another important component of agricultural production is the provision of inputs. Along with types of production, seeding and harvesting process, and storage facilities, it constitutes the content of the third part of producers' interview. Among the inputs required for potato production, potato seed is the most crucial one since it is generally provided from other regions, and producers have to pay in cash. As will be discussed later, potato seeds are important in terms of their high share in the total cost of production as well. So, producers, except the ones who decide to work with firms under contract farming, bear the cost of potato seeds at the beginning of cultivation season. Thanks to contract farming, contracting potato producers can postpone the payment for seeds until the harvesting period.

Potato producers in Çorum province buy potato seeds from different regions throughout Turkey. Among them, İzmir (Ödemiş) comes into prominence as a seed supplier. In Figure 7, the distribution of seed suppliers to Çorum province is presented on a map. As you can see, there exist 8 different provinces where producers in Çorum buy potato seeds from. According to the frequency of the answers of producers in the sample, Nevşehir, Bitlis (Ahlat), and Sivas come after

İzmir (Ödemiş) with the shares 13%, 7%, and 7% in all answers, respectively. The provinces of Niğde, Adana, Afyon, and Kayseri each constitute 4% of the answers. The remaining answers affirm that 20% of producers use potato seeds supplied by the contracting firms.

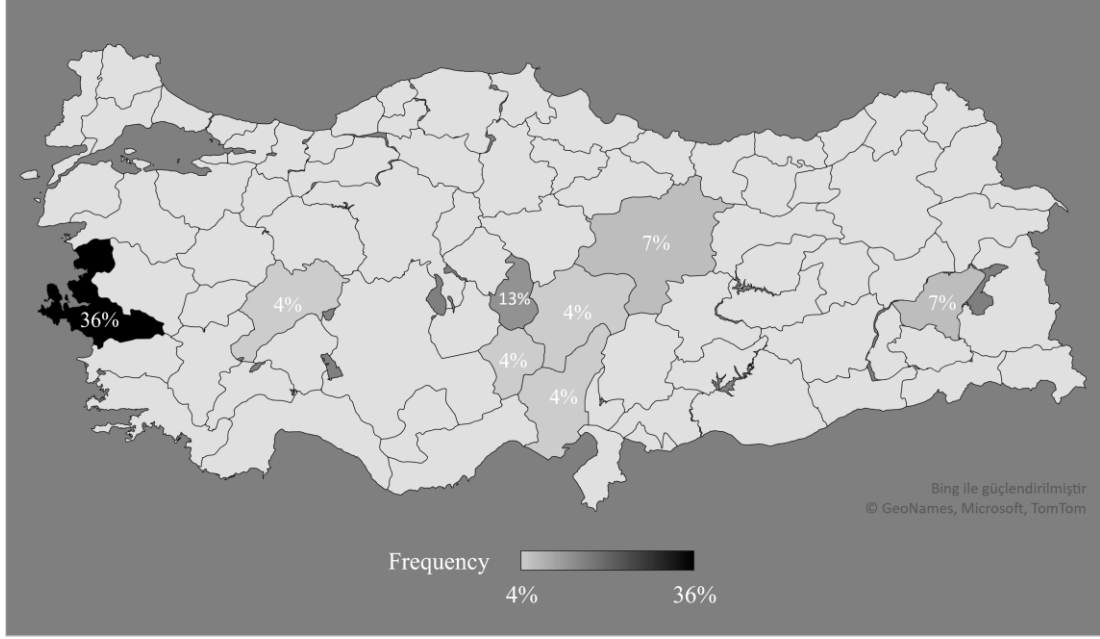


Figure 7. The provinces where producers in Çorum buy potato seeds from

Before mentioning the provision of other inputs, it is necessary to look at whether potato producers in Çorum provinces use certified seeds or not. It is important because there occurs some implication of the usage of certified seeds regarding fertility, and subsidies of government. Certified seeds are tested, analyzed, and documented by the institutions authorized by the Ministry of Agriculture and Forestry and it is estimated that these seeds are 25% more fertile than the other seeds (Anadolu Ajansı, 2019). In addition, both users and producers of certified seeds can utilize from subsidies of government per decare. For potato sector, the subsidy paid to producers who use certified seeds is 80 TL/decare and it is considerably higher than the subsidies for certified seeds of other agricultural products (Ministry of Agriculture and Forestry, 2019). However, as stated by potato producers in Çorum

province, only those who have contracts with firms generally use certified seeds provided by the contracting firms. Thus, it corresponds to 33% of the producers in the sample. Even if reasons of the producers who do not use certified potato seed are not same, we can list the most prominent factors as follows:

- The higher price of certified seeds compared to other seeds,
- Lack of trust in seed dealers who sell certified seeds,
- Not being able to take the subsidies on time for the usage of certified seeds,
- The additional costs incurred while trying to raise certified seed such as extra fertilizer and water demanded by this kind of seeds,
- Low fertility experienced previously even if certified seeds were used.

Producers also need various inputs such as fertilizer, pesticide, diesel oil, electricity, water, etc. along with potato seeds. Potato producers in Çorum province generally buy fertilizer and pesticide from the retailers, agricultural credit cooperatives, or the Chamber of Agriculture located in the province. However, the most common provider of these two inputs is the retailers according to the answers of producers in the sample. After experience in a length of time, producers start to have some retailers in their network, and they choose to work with them by virtue of easy terms of payment provided by those retailers.

Potato production requires irrigation and there are some other components connected with water needed (Chamber of Agriculture Engineers, 2018). Especially during the flowering stage of potato, it needs a high amount of water, but it is enough to irrigate agricultural land frequently with a little amount of water at the next stages (Torku). Along with water, one of the main components of irrigation is electricity because most of the producers in Çorum province use pumped irrigation by drilling

water well. While electricity is usually consumed during pumping, there are few producers who use a tractor and thus, diesel oil for the pumping process.

The last issue regarding the inputs in the producers' interview was about agricultural machines. The potato producers in the sample have been asked whether they own agricultural machinery required for different stages of potato production or not. While most of the potato producers use their own machines, some of them prefer to rent machines of his neighbor or to use those of his partner. The general view of the ownership status of agricultural machinery for potato producers in Çorum province is summarized in Table 7 below.

Table 7 The Ownership Status of Agricultural Machinery for Potato Producers in Çorum Province

Status	#	%
Users of their own machines	23	65.7%
Renters of their neighbors' machines	9	25.7%
Users of their partners' machines	3	8.6%

In addition to the information presented in Table 7, when the average size of agricultural lands managed by each group of potato producers classified according to the ownership status of agricultural machinery, it can be stated that the users of their own machines have the highest average size of lands (376 decares). On the other hand, the renters of their neighbors' machines and the users of their partners' machines have 81 and 250 decares average size of agricultural lands, respectively. This phenomenon implies that those who cultivate bigger agricultural lands are more inclined to buy machinery needed in various stages of potato production as expected. Also, buying machines for the restricted size of lands is not considered efficient by potato producers.

In general, using all inputs mentioned above, producers allocate their agricultural lands to potato production with one of three purposes. These are the production for the market, production for the industry, and seed production. The decision on the purpose of production depends on the region, climate, market structure, etc. (Torku). Potato producers need to select seeds in accordance with the aim of the production in their minds. Production for the market means that potato is cultivated with an intention to sell to final consumers directly or through intermediaries such as middlemen, traders, retailers, wholesale markets, market stalls, and so on. Therefore, the types of seeds used in this kind of production should be appropriate to get potatoes that can be consumed in kitchens. Production for industry requires to reach one of the firms which carry on business in sectors whose input is potato. Potato chips, finger potatoes, canned potato, potato flour, cream potatoes, and potato starch can be considered as the most common types of products of these firms. Finally, farmers may allocate their lands to the seed production either to use the seeds in their own agricultural land as inputs or sell to other producers. Similarly, after preferring seed production, the type of seeds that will be used in production, cultivation process, and sales channels should be planned in line with this choice.

In addition, these purposes of production determine the sales channels of producers in some way. However, this issue will not be elaborated here since it is discussed in detail in Chapter 5. At least for now, it is enough to present the choice of the producers in the sample about the purposes of production before passing on to the last question of the third part of the producers' interview. During the interviews, it is observed that potato producers in Çorum province have tended toward only two purposes of production which are the production for the market and the industry.

Few producers among them produce potato seeds for their own agricultural lands but this production constitutes a small scale of the total amount of potato seed needed and thus, does not meet the need for potato seeds. All potato producers in the sample allocate at least some part of their lands to the production for the market. Only %33 of producers in the sample produce potatoes with the aim of production for industry. The production for the industry is generally realized through contract farming in Çorum province.

There are 71 provinces where potato is produced in Turkey. It means that there exists potato production in almost every city of Turkey. However, the total production in some provinces excess the total potato consumed by inhabitants of those provinces. Also, other provinces cannot meet the total potato demand of people who live there. Another important issue regarding the relationship between supply and demand of potato is that potato can be produced in particular months of a year while people want to purchase potato during the whole year. Thus, there are imbalances between potato supply and demand in terms of location and timing. In order to understand where Çorum province is positioned compared to other provinces of Turkey, it is better to start investigating the imbalances between potato supply and demand from the point of locations.

Since there is no data regarding the amount of potato consumption in each province, it must be estimated. The average potato consumed by each person in a year is 65 kilograms for Turkey (Kaya, 2015). So, the total consumption of provinces can be estimated approximately assuming that this average consumption is the same for all individuals in every province. Then, supply-demand coverage ratios can be calculated for the potato sector in each province by using the potato production data

of the Turkish Statistical Institute. In Table 8, average potato supply-demand coverage ratios of 81 provinces for the years between 2014 and 2018 are presented.

Table 8. Average Potato Supply-Demand Coverage Ratios of Provinces in Turkey between 2014 and 2018

The Number of Provinces	Coverage Ratio (%)
10	No registered production
25	<1%
18	1-50%
7	50-100%
10	100-200%
11	>200%

Source: (TurkStat, 2018)

Table 8 indicates that 60 provinces of Turkey cannot meet the estimated average potato demand of their inhabitants. However, on the other hand, 21 provinces have excess supply. This finding shows one of the aspects of the demand and supply gap which leads to the trade between provinces. Çorum province is positioned among the provinces whose coverage ratios are between 100% and 200%. As summarized in Table 9, when the last five years are considered, Çorum could not have enough potato production to meet the estimated potato consumption in only 2014. In the other years, Çorum province has experienced an excess supply of potato. However, as mentioned earlier, this is not the only aspect of imbalance between supply and demand of potato and thus, producers in Çorum need to sell some amount of their production to other provinces and inhabitants of Çorum also must buy potato from outside. The reason behind these necessities is related to the timing of potato production.

Table 9. Potato Supply-Demand Coverage Ratios of Çorum Provinces

Years	Potato Production (tonne)	Estimated Potato Consumption (tonne)	Coverage Ratio (%)
2014	31189	34269	91%
2015	37734	34137	111%
2016	41821	34311	122%
2017	41675	34347	121%
2018	40784	34871	117%
Average	38641	34387	112%

Source: (TurkStat, 2018) and (Kaya, 2015)

Since the provinces have differences in terms of climate conditions, there exists variation in the timing of seeding and harvesting. This property of potato production in Turkey is the second aspect of imbalance between supply and demand of potato as mentioned above. The next question of the third part of the producers' interview aims to identify the calendar of potato production in Turkey and the position of Çorum province in that calendar. The following timeline in Figure 8 is created by compiling the answers of potato producers in Çorum and by utilizing the calendar prepared by Özdemir (2003) for nine provinces. Even if it does not include all provinces where potato is cultivated, it provides an overall picture with the prominent ones in potato production.

As seen in Figure 8, there exists a cycle in potato production for Turkey. Except for three months (January, February, and March), potato production proceeds. During those months passing without potato production, the need for potato is met from the storages. The time of the harvest in Çorum comes after that of Amasya and it is positioned in the middle of the timeline. This pattern observed in potato production is the second driving force of the potato trade between provinces. Traders

travel among the provinces considering the cycle mentioned and buy potatoes in order to sell in the other regions of Turkey.

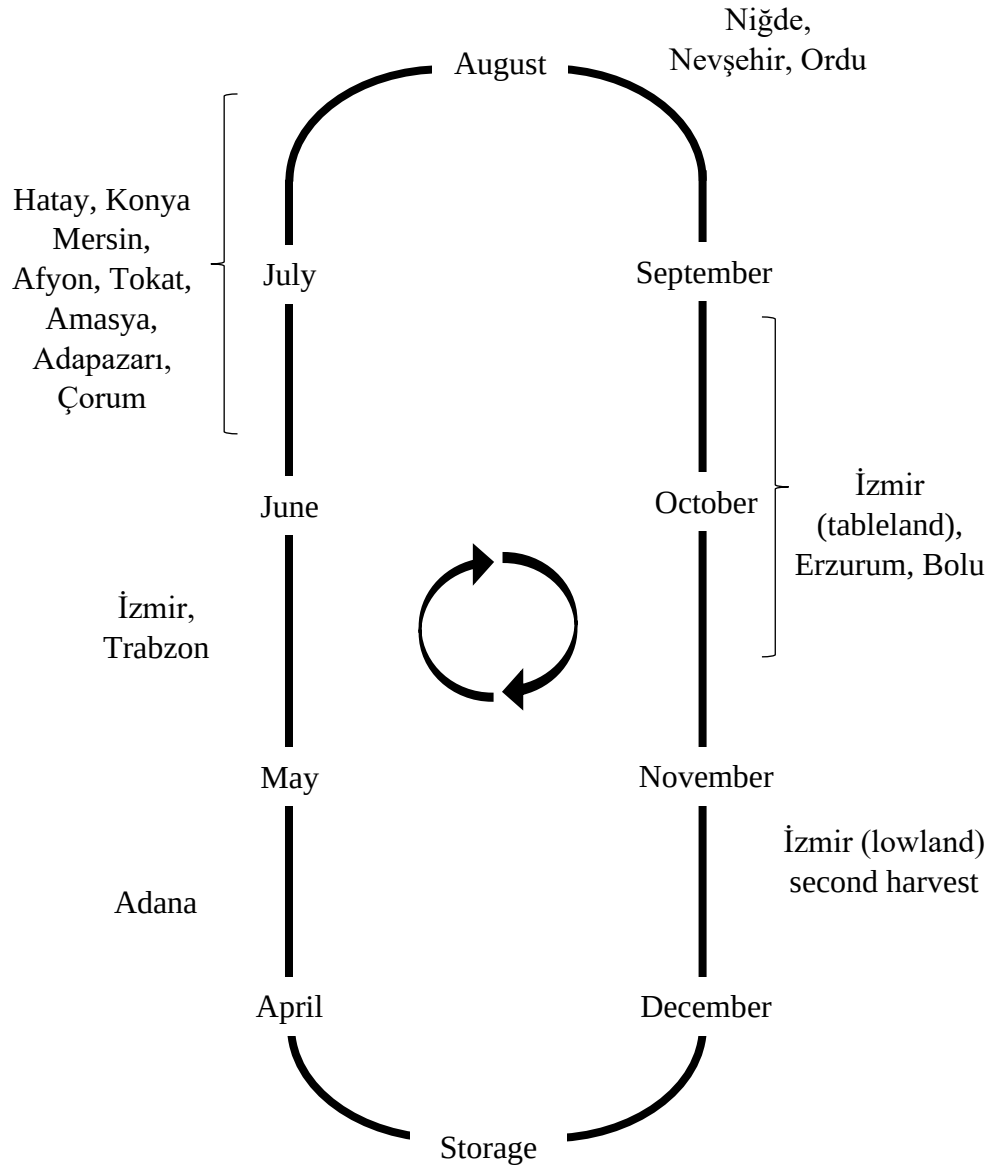


Figure 8. The timeline of potato harvesting in Turkey
Source: (Özdemir, 2003)

The last question of the third part of the producers' interview regarding the seeding and harvesting process examines the storage facilities of potato producers in Çorum provinces. Since 80% of potato is water, it starts to experience weight loss after the harvest (Torku). The longer it is kept after the harvest, the more water it loses. As a matter of fact, it implies a decrease in quality. Therefore, it is required to

have proper storage facilities to store potatoes without higher losses. However, few provinces in Turkey have such kinds of storage facilities naturally. The producers in the neighborhood of Cappadocia can utilize caves as a natural storage. In other provinces where there are not any natural storages, producers may use cold storages. In that case, they have to bear an additional cost.

In Çorum province, potato producers have stated that they have neither natural storage nor cold storage. Only 30% of the producers in the sample have their own storage. Among these producers, most of them use the basement of their houses and the total capacity is small compare to the amount of potato harvested. Few producers have built separate storages. The last option for those who do not have storage or are exposed to lack of capacity in their storage is keeping potatoes under the land longer period. To implement the last option, the producer needs to make additional irrigation and to use more pesticides. These findings show that the storage facilities for potato producers in Çorum province are restricted and insufficient. Although a producer has a chance to store their harvest, improper conditions of current storages cause a high rate of wastage during the storage period. Therefore, they prefer to sell their harvest as soon as possible in order to abstain from extra costs of storages and to prevent the wastage. Also, the debt burden can be seen as another reason behind this preference. However, it will be discussed in the following parts.

4.4 Sales process and price formation

Forth part of the producers' interview constitutes the main focus of interest of the study. As mentioned earlier, in this part, sales channels, the frequency of changes in buyers, bargaining, price formation at the farm gate, payment process, the sources of

information about farm gate, wholesale or retail prices, and the degree of information asymmetry among actors are the issues that are expected to be answered by the producers. Since the details about the answers have been explained in Chapter 5, we proceed to the results of the producers' interview regarding costs, the methods of finance used by producers, indebtedness, and the subsidies of government they utilized from.

4.5 Costs and financing

Along with potato seeds, producers in Çorum province have also various inputs and costs regarding these inputs. During the interviews, the producers in the sample were asked about the costliest inputs of the potato production process. Their responses have been categorized and ordered depending upon their frequency. As it is expressed by percentages in Figure 9, the most common inputs mentioned in the answers of the producers are fertilizer, seed, pesticide, and diesel oil, respectively.

The interview does not include the cost value of each input above. However, at this point, a calculation for the potato sector in another study can be reiterated. Bilgen (2014) provides cost calculation of each input for 12 different agricultural products cultivated in Gördes, Manisa. His study consists of the years between 2008 and 2014. Among these 12 agricultural products, there are calculations for potato as well. In order to compare the answers provided by potato producers in Çorum province regarding the cost of potato production with the calculation in the study mentioned, the data collected by Bilgen will be shared in Figure 10 below.

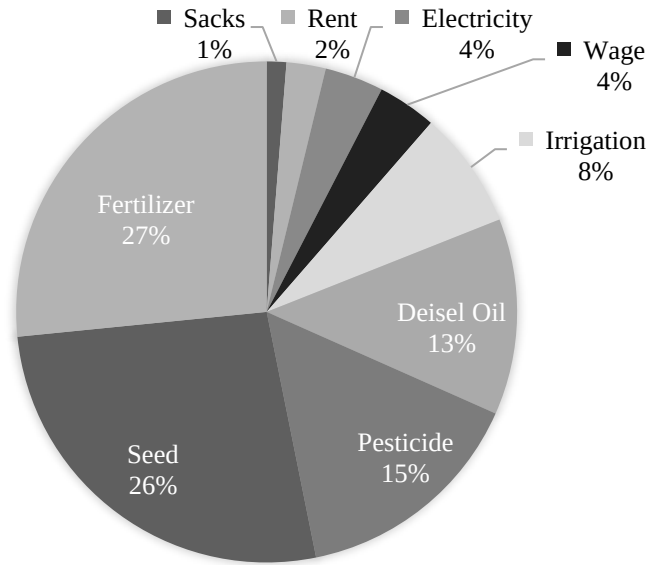


Figure 9. The most common cost items mentioned in the answers of the potato producers of Çorum province (by percentage)

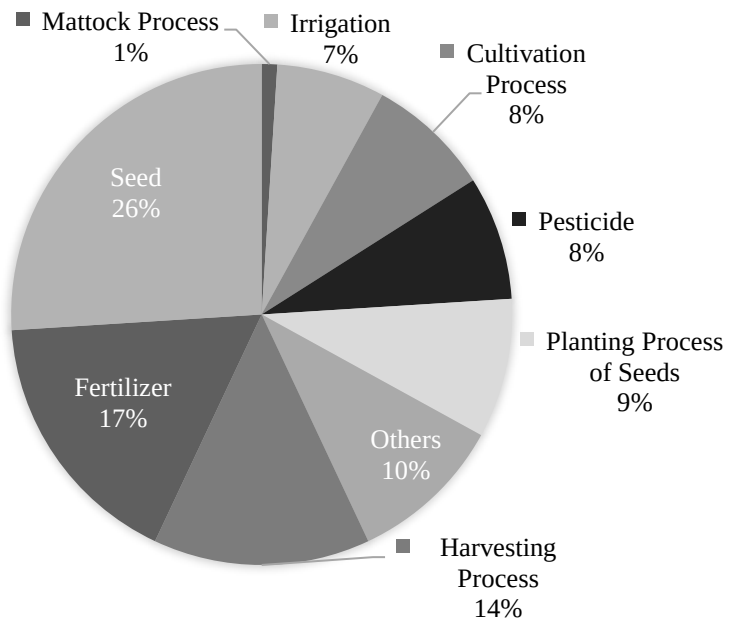


Figure 10. Share of each input in average total cost between 2008-2014 for potato producers in Gördes, Manisa
Source: (Bilgen, 2014)

Since the inputs are not classified in the same manner for two studies, it is not straightforward to compare the cost structure of potato producers in both provinces. However, similar cost items such as seed, fertilizer, pesticide, and irrigation come

into prominence for potato producers both in Çorum and Manisa. Even if the share of diesel oil is not precisely defined in Figure 10, it is known that both the planting process of seeds and harvesting process is carried out by machines that need diesel oil as input. Thus, it can be said that the share of diesel oil is also close to that in Figure 9 because the total share of two processes mentioned constitutes 23% of the total cost and the main component of it is diesel oil.

In the agricultural sector, there is a time gap between when the cost realizes and when the gain is derived. Producers need to buy required inputs at least several months before sales of agricultural products harvested. Therefore, financing the cost of inputs is crucial so as to maintain the production. The same phenomenon can be observed in the potato sector of Çorum province. The potato producers in the provinces have multiple ways to finance their costs. These methods can be classified into two main categories as self-financing and external financing:

- Self-Financing
 - Using profits derived from the sales in the previous year,
 - Utilizing the gains of other products harvested in the current year,
 - Employing the revenues obtained from the secondary sources of income such as livestock farming, part-time jobs, working in a factory, etc.
 - Using the regular income acquired from the sales in the market stalls.
- External Financing
 - Contract farming (especially to finance the cost of seeds),
 - Buying the inputs from retailers, agricultural credit cooperatives, and the chamber of agriculture with deferred payments (it is generally valid for fertilizer and pesticide),

- Using the credit cards specific to farmers provided by banks,
- Getting credit from banks, agricultural credit cooperatives or the people in the network.

As can be seen above, the methods under the self-financing involve either good revenues in the previous year or an additional effort such as multiple cropping and having a secondary source of income. When the potato producers in the sample are considered, 50% of the producers have been selling agricultural products in the market stalls. Also, 30% of potato producers have a secondary occupation. Finally, it has been already stated that 88% of the producers cultivate at least one more type of agricultural products along with potato either in the same lands after harvesting potato or in different agricultural land they manage. The rates above imply that almost all potato producers apply one of the methods under self-financing. So, they make an effort to achieve self-financing to a certain extent.

One way to understand whether those efforts are sufficient for sustainable agricultural production or not is to investigate the prevalence of the external finance methods among the potato producers. For the first method of external financing mentioned above, 33% of the producers sell some parts of the products harvested to the firms under contract farming. It means that these producers can make deferred payments for potato seeds provided by the firms. 46% of the producers in the sample buy fertilizer or pesticide from one of the agents in the second method of external financing. Since the last two methods are closely linked to the banks, they can be considered together. In that case, it has been observed that 70% of potato producers in the sample have a relationship with banks as a borrower. These findings point out the insufficiency of the self-financing methods.

The last question of the fifth part of the producers' interview is about the subsidies provided by the government. Currently, the government gives financial supports to potato producers at various points. Table 10 includes all subsidies that are of particular concern to potato producers in 2019. The aim is to present the current situation of the subsidies which potato producers may utilize rather than to elaborate on all types of subsidies.

Table 10. Subsidies Provided by the Government for Potato Producers in 2019

Type of the Subsidies	Financial Support (TL/decare)
Small Family Business Dealing with Plant Production	100 TL
Good Farming Practice (for individuals)	50 TL
Diesel Oil	27 TL
Fertilizer	4 TL
Organic Agriculture (first category, and for individuals)	70 TL
Soil Analysis (TL/sample)	40 TL
Biotechnical Struggle Support	80 TL
Biological Struggle Support	50 TL
Domestic Certified Seed Use	80 TL
Domestic Certified Seed Production (TL/kg)	0.10 TL

Source: (Ministry of Agriculture and Forestry, 2019)

In the first step, potato producers in the sample were asked whether they utilize government subsidies or not. According to their responses, 42% of the producers cannot take subsidies for the production in the agricultural lands managed

by them. As explained before, the main reason for being unable to benefit from government subsidies is the unofficial rental contracts between the producers and the owners of the agricultural lands. 86% of potato producers in the sample cultivate rented agricultural lands and 58% of the producers among them do not have official rental contracts. Thus, more than half of producers in the sample who use rented lands do not have official rental contracts. If a producer cultivates rented agricultural lands with unofficial rental contracts, he cannot submit his production to Farmer Registration System and utilize subsidies of government.

In the second step, the opinions of those who can take at least one of the types of government subsidies are gathered. Their comments can be classified into four categories as follows:

- The share of subsidies in the total cost of the production is minor,
- The most needed support is not subsidies. The government should keep the price level of agricultural products stable,
- It is preferred lower prices of inputs rather than subsidies,
- Producers need assistance of the government in marketing process.

Consequently, most of the potato producers in Çorum province have problems to get official rental contracts and this prevents utilizing government subsidies. Other producers who benefit from government subsidies to some extent prefer direct support of the government such as a stable price level, lower prices of inputs, and assistance in the marketing process.

CHAPTER 5

SALES CHANNELS OF POTATO PRODUCERS

In this chapter, all sales channels available for potato producers in Çorum province are going to be mentioned and their main characteristics will be discussed according to information gathered from all interviews mentioned in Chapter 3 and provided in Appendix A. Therefore, the chapter is one of the most important parts of the thesis before passing on to the modeling stage.

During the interviews, it is observed that there exist three sales channels available for the potato producers in Çorum province: market stalls, traders, and industry. The second sales channel can be divided into two as traders in the wholesale market of Çorum province and traders coming from outside. Thus, the total number of sales channels becomes four when the subdivision of traders is added.

In Figure 11, the marketing channel preferences of potato producers in Çorum province are summarized. Each set represents the main types of producers classified according to the sales channels used by the producers in the sample. Also, the producers who sell their products through more than one sales channel are positioned in the intersections of the sets. 82% of the producers in the sample work with the traders either in the wholesale market of the province or coming from the outside. 40% of the producers have a market stall in the marketplaces of Çorum province. On the other hand, 33% of the producers work with firms under contract farming. However, there is not any producer who only depends on sales to the industry. All the producers having contracts with firms also sell their rest of the products to the traders. Also, the producers who have market stalls in the marketplaces do not sell

their products to the firms. Finally, %22 of the producers in the sample sell their products both to the traders, and in the market stalls.

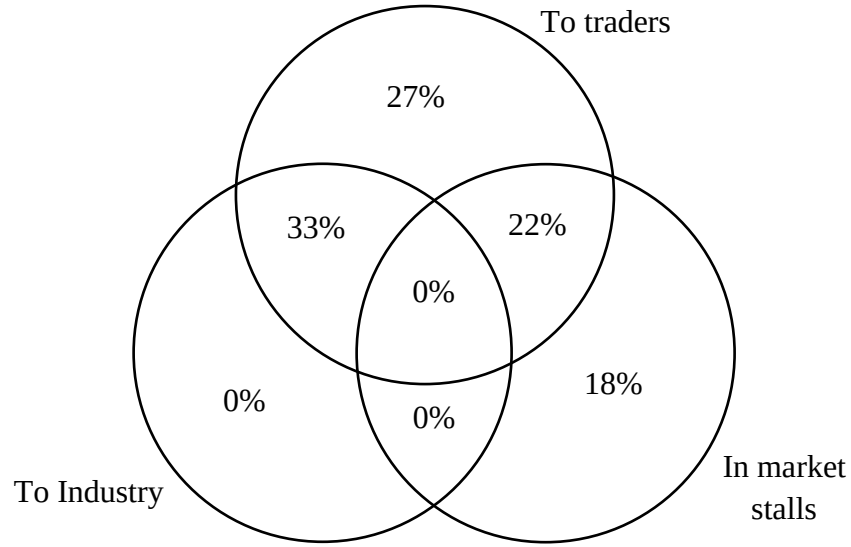


Figure 11. Types of producers classified according to the sales channels

The following subchapters consist of main characteristics, advantages, and disadvantages of each marketing channel, the factors that affect the preferences of potato producers, price formation, and the relationship between producers and buyers in these marketing channels. Since the share of sales to the traders in the wholesale market of Çorum province in the total amount of potato sales is small, sales to traders will be considered as a single marketing channel without the subdivision mentioned above and will be discussed in the same subchapter.

5.1 Sales in market stalls

At least one marketplace is established every day in the Central District of Çorum. Since there exist two market places on Friday, the total number of market places in a week is eight (Ministry of Commerce, 2019). All of them has a particular location and there are three different actors who sale potato in each marketplace. These are

market keepers who sell potato without producing it, potato producers who have registered as a market keeper, and other potato producers.

The first group constitutes a small part of potato sellers in the marketplaces because most of the potato sellers also produce potatoes in their agricultural lands. The second group has the highest share in the marketplaces. In the harvest season, they sell their own products until they finish all potatoes harvested from their agricultural lands. Afterward, they start to buy potatoes from different provinces of Turkey, especially from those which have natural storage facilities such as Niğde. The market stalls are allocated among the first two groups by drawing lots. The final group of potato sellers is farmers who are not registered as market keepers. By Wholesale Market Act, 20% of the total size of the market places must be withheld for the farmers in the third group (Ministry of Commerce, 2010). However, there is no specific allocation of this part of marketplaces among farmers in this group. They need to come earlier in order to find an available place for selling their produces. Also, the size of their market stalls is smaller compared to those of market keepers in the first two groups.

Only 40% of the potato producers who attended the interview, sell their products in the market stalls. Among them, only one seller does not produce potato and buys the amount of potato needed from the producers in Çorum or traders in the other provinces. As a matter of fact, the minor share of the first group of potato sellers in the marketplaces has been mentioned previously. The marketplaces are the only option of marketing for 18% of potato sellers who attended the interview. Other potato sellers in one of the marketplaces have additional marketing channels such as traders in the wholesale market of Çorum, and other traders who come from other provinces. These sales channels will be explained in the following subchapters.

As the ratio of potato producers who prefer to sell in market stalls indicates, the significant part of the potato producers, 60%, do not use this marketing channel. This is a natural conclusion because of the fact that the annual production exceeds the annual consumption in Çorum provinces as mentioned in Subchapter 4.4. Also, the other properties regarding the timing of potato production discussed in the same subchapter requires potato sales to outside the province. Finally, the marketplaces appeal to certain types of people in terms of purchasing power and consumption preferences. That is why the total production of all potato producers in Çorum province cannot be consumed by clients of the marketplaces.

Although the natural constraints which have been discussed in Chapter 4 and reiterated in the previous paragraph can explain one part of the phenomenon, it is necessary to mention why some of the potato producers prefer to sell in the market places and others do not.

One of the factors that affect the preference of producers is the extra workload caused by selling in the marketplaces. If a producer starts to sell in his market stall, he needs to wake up earlier and supply a particular amount of potato to the marketplace every day. When their own produce is finished, they must buy potatoes from other provinces in order to continue selling in the marketplaces. In addition, it is required to pay the fee for the cleaning and safety services provided by the municipality. These burdens may not be preferred by most of the farmers because they get used to finalize the selling process during the harvest season.

The second factor that influences the preference of whether to sell in the market stall or not is the size of land owned by the producer. When the size of land owned by the producer is large, it is not possible to sell all of the produces harvested from these agricultural lands in the market stalls within a short period of time. As

explained in Chapter 4, the potato should be sold within a short period of time because of the nature of the potato and the lack of storage facilities. Thus, bigger producers do not want to engage in market stalls, and they sell their products to traders or firms directly.

The last important factor regarding the preference mentioned above is related to the attitude of the producer's father. If the previous generations have preferred to sell in the marketplaces, most of the producers are inclined to continue this tradition regardless of the size of the harvest.

When we look at the contribution of sales in the marketplaces to potato producers, it can be said that those sales provide permanent cash flows during the whole year. However, this contribution is valid for the first two groups. Because the farmers who are not registered as market keeper sell only their own harvest but buy potato from other farmers neither in Çorum nor outside the province. Since potato can be stored for a short period of time and very few producers cultivate potato for the second time in a year, they do not have potato to sell in the market stalls during the whole year. Therefore, they utilize the cash flow gained from the sales in the market stalls for only a couple of months after their first harvest. The cash flows for the first two groups ensure their financial power. It is because they are less in need of debts from financial institutions in order to prepare for the next cultivation thanks to gains from sales in the marketplaces. Of course, it does not mean that they do not use credit from financial institutions.

Potato producers who have market stalls were asked about the price formation in the marketplaces. According to their answers, the common way they adopt in order to decide the price is by adding a particular profit margin to their costs. Since they can sell their own produces during the harvest season of the province, their costs

including every step from field to market stalls are lower compare to times when they buy potatoes from other provinces. It means that average prices, while they are selling their own harvest, is also lower than the prices in the other seasons.

Compared to the price adopted by other producers whose harvest has been out of, the lower prices in the market stalls where the producer continues selling his own harvest supports the statement about the price formation as well.

5.2 Sales to traders

The second marketing channel for the potato producers in Çorum province is sales to traders. Owing to the fact that there are only two potato traders in the wholesale market of the city and they are also potato producers in their own agricultural lands, the share of trade between them and potato producers in the total potato trade of the province is low. For this reason, traders who come from outside Çorum are dominant in the second marketing channel of potato producers.

82% of the potato producers who attended the interview sell their products to the traders. Only 18% of producers do not deal with the traders. As you can see that selling to traders is the most common marketing channel for potato producers in the province. The share of potato producers who sell their harvest only to traders among the interviewed producers is 27%. When it is considered that just 4% of potato producers are working with the traders in the wholesale market of the province, the dominance of traders who come from outside the province will be recognized.

Even if there is no accessible and official database in order to figure out where the traders come from to Çorum province, the following provinces can be listed according to the answers of producers: Ankara, Ordu, Rize, Trabzon, Samsun, Nevşehir, İstanbul, İzmir. However, it is needed to note that some respondents know

the region where the trader comes from, but they do not have any information about where the traders sell the products. For instance, a trader who comes from Nevşehir may sell the products he bought to buyers in the Black Sea Region. Hence, consistent with the answers of producers, it is observed that some traders deal with such a trade as in the example. These findings indicate that the Black Sea Region comes into prominence in terms of share of sales realized from Çorum to the region.

The network is the key component of the trade between producers and traders. It is important in terms of getting information about the size of the harvest and the prices in the current year. Also, the network is crucial regarding contact with traders. Before the first seeding period which is between the 15th of February and end of March for Çorum province, most of the producers start to contact with other producers both in Çorum and different provinces, traders or seed dealers in order to figure out the possible situation of production in the related year. The information gathered in this period has effects on the decision for the cultivation area to some extent. Naturally, there are other factors that are effective in this decision. Since these factors were discussed in Chapter 5, it is not necessary to repeat them.

When the time for the first harvest comes, producers use their network to learn about the price levels in the regions where the time of harvest is earlier than that of Çorum province. Thanks to this information, the producers have a price interval in their minds while negotiating with the traders in the harvest period of their own province. However, it cannot be claimed that the price information gathered from different sources in the network of producers is totally trustable. The producers who attended the interview look skeptical about the prices shared by producers or traders. Behind the skeptical approach towards the information provided by producers or traders, there is a lack of trust between actors. Producers know that

traders do not want to increase the prices by sharing the actual price in the case of higher price levels. In order to keep the prices low, traders may not share true prices and want producers who sell their harvest not to share the price agreed on to other producers. The other aspect of the trust between actors will be discussed onwards.

The last important role of the network shows up in the stage of matching producers with traders. As discussed at the beginning of this subchapter, selling to traders is the most common marketing channel for potato producers in the province. Therefore, finding a trader to sell the produce is vital for all producers. The probability of matching with a familiar trader is high for the producers who have a strong network. Producers are inclined to sell their products to familiar traders in their network. They do not prefer to sell the harvest to unfamiliar traders when they have available options from familiar ones. This is because of the fact that entrance to the market is easy and the existence of unfamiliar traders who enter the market for fraud. According to the statement of the producers, “you can be a trader with only a cellphone and a notebook”. Even if this statement emphasizes the lack of barriers to entry, being a trader is not as simple as much as the producers claim. First of all, there are official rules that regulate the entry of traders to the market. Also, prospective traders have to satisfy the need for capital, experience in farming, and strong relationships with relevant actors (Mitra, Mookherjee, Torero, & Visaria, 2018).

As stated in the previous paragraph, the traders coming from outside the province can be classified as familiar and unfamiliar traders. The familiar trader for a producer can be defined as a trader whom the producer did business with at least one time and received the payment from him. This kind of successful trades creates trust in the trader. The unfamiliar trader is the one who comes to the province for the first

time and has not done any business with a farmer in the province. Producers look askance at those unfamiliar traders because either he or one of the other producers in his network has been defrauded by them or they have experienced non-negligible payment delays in the trades with them. Therefore, most of the farmers want unfamiliar traders to have a reference from a person they trust in and prefer to make the payment in cash while negotiating with them. However, even if they agreed on cash payment, delays in payment may still occur. As you can see, in addition to price information mentioned above, trust comes into prominence along with the network in the case of negotiation with both familiar and unfamiliar traders.

Depending upon the network that producers have and their trust in the possible traders who are either in his network or contact with them to buy their produces for the first time, the producers start to negotiate with a particular number of possible buyers. In the negotiation process, as mentioned above, the producers have a price interval constituted by using the information gathered before the first harvest season in the province. In addition, the information shared by their neighbors or other producers of the province in their network becomes an additional information source for the prices that affect the price interval in their mind after the first harvests have started in the province. Even if traders' offers are more effective in price formation during the negotiations, producers have the option of rejecting the offer or asking a new price from the traders. Now, it is better to look at the factors that constitute the boundaries of the price interval and where price taken by each producer positions in that price interval.

In the background of the price interval, there are many factors that affect agricultural food prices. Most of them are listed in the previous works (Koç, 2015). Macroeconomic factors such as foreign trade policies of the countries, costs of the

inputs, the prices in the previous year, climatological conditions, taxation, subsidies, change in dietary habits, population growth, and changes in purchasing power can be considered as exogenous factors. In addition to them, the quality of the harvest, storage conditions, the debt burden of the producers, the organizational abilities among producers, packaging of the products, and state of technology used in production and marketing processes are other determinants that are in the spheres of influence of the producers to some extent.

In this stage, it is important to focus on the price determinants in the spheres of influence of the producers. Farmers who are able to produce good quality potatoes can sell their harvest with higher prices that are close to the upper bound of the price interval. Also, better packaging of potato eases to take higher prices. The debt burden on producers and the lack of storage facilities shorten the time allocated to waiting for better offers from traders. A producer who has oncoming payments does not have any option other than selling to one of the first traders he bargains with. Similarly, the absence of cold storages or natural storages such as caves prevents farmers from keeping their harvest with a low rate of wastage. Therefore, they have to sell their products harvested within a short period. This situation constraints the bargaining power of the producers. When the producers do not act jointly or establish a producer organization in order to manage the marketing process of their harvest, they stand alone during the bargaining with traders. If they do not share the information about the prices to each other along with the absence of joint acts and producer organizations, the bargaining power of the producers will be diminished severely.

In a nutshell, producers get the information about the potato prices that are constituted by macroeconomics conditions mentioned above and they have a price interval in their minds according to this information they gathered. Then, they try to

take the highest possible price from either familiar or unfamiliar traders within the price interval by managing the factors that they are able to affect.

Before passing on to the next subchapter, it is necessary to mention the most important problems faced by producers in this marketing channel. These are fraud and delays in payment. Producers complain about the lack of designated authority to apply in the case of payment delays or frauds. Even if there exist arbitration courts in the wholesale markets of the provinces by operation of law (Ministry of Commerce, 2010), producers think that these courts do not get into the act effectively. Also, some of the traders protect themselves from possible legal processes by transferring their real estate to another person. This strategy developed by traders who are inclined to defraud prevents producers to take their payment by initiating legal action. According to the answers of producers who attended the interview, 50% of producers who sell their harvest to the traders coming from outside the province have experienced payment delays or frauds in the last year. These findings indicate how the problem is common and that the current institutions are not sufficient to solve it.

As stated in Chapter 4, producers generally finance the cost of cultivation through contract farming, buying inputs with deferred payments from retailers, agricultural credit cooperatives and the chamber of agriculture, using the credit cards specific to farmers provided by banks, and getting credit from banks, agricultural credit cooperatives or the people in the network. If they face one of the problems mentioned in the previous paragraph, they start to have difficulty in the payments of their debts. This situation causes either going deeper into debt or being unable to cultivate their agricultural lands in the next year.

5.3 Sales to the industry

The last marketing channel for potato producers in Çorum province is selling to the industry that uses potato as an input. In this industry, there are firms producing potato chips, finger potatoes, canned potato, potato flour, cream potatoes, and potato starch. Contract farming is the main way of doing business between potato producers and the firms in the industry. It can be defined as forward agreements that include the obligations of producers and buyers (Federal Ministry for Economic Cooperation and Development, 2013).

When the answers of the producers who attended the interview considered, it is observed that 33% of them sell part of their harvest to the firms. Interestingly, any of the producers who sell potatoes in the market stalls do not have a contract with the firms. It might be because of the fact that the average size of land owned by producers who have market stalls (90 decares) is considerably smaller than that of land owned by all producers in the sample (302 decares). The firms buying a large number of potatoes do not find it efficient to work with lots of smaller farmers in order to procure the amount they need. In addition, all the producers working with firms also sells to the traders coming from outside the province. Thus, selling to the industry is not the only marketing channel for the producers included in this percentage.

All of the firms provide seeds to the producers at the beginning of the first cultivation period. Some of the firms also have additional demands and conditions about the cultivation process such as issues regarding the usage of fertilizers and pesticides. The provision of seeds is a crucial characteristic of this marketing channel for the producers because of its' high share in the total cost of the producers as mentioned in Chapter 4. The firms request the payment for seeds at the time of the

harvest and they deduct from the total payment they will make. Thanks to this practice, the required amount of capital to start the cultivation decreases. Also, the seeds provided by firms are generally certified ones and their fertility is higher than other seeds. Since only producers who have contracts with firms use certified seeds provided by the contracting firms as stated in Chapter 4, it is strongly possible to get higher fertility from the lands allocated to production for industry compared to those allocated to production for the market.

On the other hand, producers do not want the firms to interfere in the cultivation process. They assert that if the firms have additional demands and conditions in the contracts, producers who have to observe these conditions feel like a worker of the firms. Producers prefer to make their own decisions about production procedures. Also, producers state that their way of cultivation does not match up with the additional demand and conditions of the firms. Because of these reasons, potato producers in Çorum province who have experience in working with such firms pull out of selling to the industry or they find another firm that has less demand about the cultivation process.

In terms of prices, there are different types of contract farming. Prices can be pre-determined, indexed to prices in the market or based on the cost of production (Samsun Provincial Directorate of Food, Agriculture and Livestock, 2012). The common type adopted by the producers and the firms in Çorum province is contracts with pre-determined and constant prices. In the contracts agreed on at the beginning of the first seeding period, the prices that will be paid to the farmers are specified. This feature of the contracts might be favorable or unfavorable for the producers depending upon the prices realized in the market at the harvesting period. When the prices paid by traders are actualized lower than pre-determined prices in the

contracts, producers who allocate most of their agricultural lands to the production for the industry will be pleased to contract farming they made. Otherwise, the producers who prefer to sell their harvest to the traders will be the winning party.

Whether the pre-determined prices are higher than the prices paid by traders or not, contract farming is a solution for producers in order to protect themselves from uncertainties in the market prices. After producers agree with a firm in the industry, they make sure of the revenue they will gain during the harvest. Also, producers state that the firms they are working with make the payment on the time specified in the contracts. This statement shows that these producers are also protected from frauds and delays in payments which 50% of potato producers selling to traders suffer from.

Another important characteristic of contract farming with the industry is that firms generally prefer to make contracts with the producers whose production has been submitted to Farmer Registration System. Otherwise, they may have trouble in the procurement process of the products harvested since they need to have an official registration regarding the transactions. Thus, the producers who cannot register his production to Farmer Registration System because of the unofficial rental contract which is common for potato producers in Çorum province as mentioned in Chapter 4, may not work with firms under contract farming.

CHAPTER 6

THE MODEL

In this chapter, a model will be constructed based upon the literature review in Chapter 2 and the information regarding potato producers and their marketing channels explained in Chapters 4 and 5. This model provides a representation of the marketing process of a potato producer and the price formation at the farm gate. By means of the model, different cases can be defined through changes in the parameters that stand for the important determinants of the decision of the producers in the marketing process. Analyzing the response of the producers in the different cases will help us to find possible reasons that cause downward pressure on the producer prices. Also, this kind of model will be the first attempt for the Turkish agricultural sector, and it will be useful for further research in the field.

As mentioned above, potato producers have mainly three types of accessible marketing channels. These are market stalls, traders, and industry. Since the producers who sell their products both to traders and firms constitute the most common type of producers in Figure 11, the model will focus on this type of producer.

The model consists of two stages. The first stage corresponds to the beginning of the seeding period when producers decide the size of agricultural lands allocated to the production for the industry. The second stage of the model represents the harvesting period when producers start to bargain with traders to sell their products harvested from the agricultural lands allocated to the production for the market.

6.1 First stage

The producer needs to decide how much of his agricultural land will be allocated to production for firms under contract farming (Q_c) at the beginning of the seedtime of the province. The remaining part of his agricultural lands ($Q_m = Q - Q_c$) will be cultivated to sell its yield to the traders coming from outside the province during the harvesting period. Even if the price offered by firms (P_c) is known, prices that might be paid to the producer by traders during the harvesting period (P_m) is uncertain. Therefore, the producer have to decide the size of agricultural lands allocated to production both for industry and market according to his expectation for market prices ($E[P_m]$) at the beginning of the seedtime.

Before defining the expected market price, it necessary to mention characteristics of different types of traders, the network of the producer, the upper and the lower bounds of the prices in the previous year, and the probability assigned to higher prices in the current year because they may have effects on the expected market price and expected revenue from the sales to the traders. As discussed in Chapter 5, the producer can sell his harvest to familiar (T_f) or unfamiliar traders (T_u). One of the most important distinctions between them is that the ratio of the total payment made by familiar traders without delay or fraud ($0 \leq \beta \leq 1$) is higher than that paid by unfamiliar traders. When the producer sells his products to unfamiliar traders, he cannot get the whole payment he deserved, or it is paid within a long period of time. So, β_f which represents the ratio mentioned above for familiar traders is higher than β_u which corresponds to the same parameter for unfamiliar traders. However, the producer who has a strong network with the traders in the region can protect himself from this kind of problem by working with the familiar traders in his networks. The strength of the network (z) is endogenous and depends on the choice

of the producers regarding the size of agricultural lands allocated to the production for the market. As it is expected, the producer who cultivates potato for the market in the larger size of agricultural lands compared to the average in the province has higher interaction with the traders, and stronger network. The effect of the size of the lands on the strength of the network is defined in proportion to the average in the region because the average size of lands allocated to production for the market by other producers in the province is also important for the strength of the network that the producer has. It is important since establishing a network with a limited number of possible traders in the region requires relatively dominance in the supply of products. So, the strength of the network (z) can be defined as in Equation 6.1 for a region with n number of potato producers. The strength of the network has been defined as a number between 0 and 1 because it will be used as a probability of finding a familiar trader during the first harvest season.

$$z = \frac{(Q - Q_c)/A}{1 + (Q - Q_c)/A} \quad (6.1)$$

where $z \in (0,1)$ and

$$A = \frac{1}{n} \sum_{-i}^n (Q_i - Q_{c_i})$$

Producers give importance to the prices realized in the previous year while forecasting the prices in the current season. Also, they consider other parameters such as seed sales and the size of agricultural lands cultivated in the other regions where seedtimes come before that of their province. After all considerations, producers predict upper (P_u) and lower bounds (P_l) that the market prices might be positioned between them. Naturally, they have a belief about the prices, and it can be

represented as a probability assigned to upper and lower bounds which are Φ and $(1 - \Phi)$ respectively. Thus, expected market prices at the beginning of the seedtime can be defined as follows:

$$E[P_m] = [\Phi.P_u + (1 - \Phi).P_l] \quad (6.2)$$

Even if the producer's expectation about the market prices is $E[P_m]$, the expected revenue generated from the sales to traders, $E[R_m]$ depends on strength of his network and the behaviors of familiar and unfamiliar traders in terms of payments. A producer can sell his products to a familiar trader in his network with probability z and the familiar trader pays $(\beta_f \times 100)$ % of the total amount of money agreed on without any delay or fraud. With probability $(1 - z)$, the producer matches with an unfamiliar trader, and $(\beta_u \times 100)$ % of the total amount of money agreed on is paid to the producer without any delay or fraud. Therefore, the expected revenue generated from one kilogram of potato sale to traders can be written as follows:

$$E[R_m] = z.\beta_f.[\Phi.P_u + (1 - \Phi).P_l] + (1 - z).\beta_u.[\Phi.P_u + (1 - \Phi).P_l] \quad (6.3)$$

$$\text{where } z, \beta_f, \beta_u \in (0,1)$$

In a nutshell, the producer expects a price based on his beliefs and the information regarding the parameters that may affect both supply and price of potatoes such as prices in the previous year, seed sales, and the size of agricultural lands cultivated in the other regions. However, the expected revenue may change depending upon his network and behaviors of different types of traders. So, one of the main issues considered by the producer at the beginning of the seedtime is the expected revenue generated from one unit of potato sale along with the price offered by firms, P_c .

The production and cost functions of the producer have been specified as in Equations 6.4, 6.5, and 6.6, respectively. The constant terms in the production function represent fertility and diminishing marginal returns are present. The term δ differs for the agricultural lands allocated for production for the market and the industry. This is because of the fact that producers use certified seeds provided by firms in the agricultural lands under contract farming while most of the producers do not prefer to use certified seeds in the agricultural lands allocated to production for the market. The reasons behind this preference have been explained in Chapter 4.

$$q_c(Q_c) = (1.5) \cdot \delta_c \cdot Q_c^{0.9} \quad (6.4)$$

$$q_m(Q_m) = (1.5) \cdot \delta_m \cdot Q_m^{0.9} \quad (6.5)$$

$$c(Q) = c \cdot Q \quad (6.6)$$

Now, using all parameters and functions defined above, at the beginning of the seedtime, the maximization problem faced by the producer who uses two marketing channels (sales to firms and traders) can be written as follows:

$$\max_{Q_c} P_c \cdot q_c(Q_c) - c(Q_c) + E[R_m] \cdot q_m(Q - Q_c) - c(Q - Q_c) \quad (6.7)$$

$$\text{subject to } Q_c > 0 \text{ and } Q_c < Q$$

In order to solve the maximization problem, the method of Lagrange multipliers will be used. So, let us continue with writing the Lagrangian:

$$\begin{aligned} \mathcal{L} = & P_c \cdot q_c(Q_c) - c(Q_c) + E[R_m] \cdot q_m(Q - Q_c) - c(Q - Q_c) + \lambda_1 \cdot Q_c \\ & - \lambda_2 \cdot (Q_c - Q) \end{aligned} \quad (6.8)$$

Kuhn-Tucker conditions are given below:

$$\mathcal{L}_{Q_c} = P_c \cdot \frac{\partial q_c(Q_c)}{\partial Q_c} + \frac{\partial E[R_m]}{\partial Q_c} \cdot q_m(Q - Q_c) \quad (6.8.1)$$

$$+ E[R_m] \cdot \frac{\partial q_m(Q - Q_c)}{\partial Q_c} + \lambda_1 - \lambda_2 = 0$$

$$\lambda_1 \cdot Q_c = 0 \quad (6.8.2)$$

$$\lambda_2 \cdot (Q_c - Q) = 0 \quad (6.8.3)$$

Before considering possible cases where optimal Q_c 's can be found, let us calculate required derivatives firstly.

$$\frac{\partial z}{\partial Q_c} = -\frac{1}{A} \cdot \left[\frac{1}{\left(1 + (Q - Q_c)/A\right)^2} \right] \quad (6.9)$$

$$\frac{\partial E[R_m]}{\partial Q_c} = -\frac{1}{A} \cdot \left[\frac{[\Phi \cdot P_u + (1 - \Phi) \cdot P_l] \cdot (\beta_f - \beta_u)}{\left(1 + (Q - Q_c)/A\right)^2} \right] \quad (6.10)$$

$$\frac{\partial q_c(Q_c)}{\partial Q_c} = (1.35) \cdot \delta_c \cdot Q_c^{-0.1} \quad (6.11)$$

$$\frac{\partial q_m(Q - Q_c)}{\partial Q_c} = -(1.35) \cdot \delta_m \cdot (Q - Q_c)^{-0.1} \quad (6.12)$$

Finally, let us plug z into $E[R_m]$:

$$E[R_m] = [\Phi \cdot P_u + (1 - \Phi) \cdot P_l] \cdot \left[\frac{\left[\frac{(Q - Q_c)}{A} \right] \cdot \beta_f + \beta_u}{1 + (Q - Q_c)/A} \right] \quad (6.13)$$

There are four possible cases depending upon whether the constraints are binding or not. The first case is that both constraints are binding. It means that λ_1 and

λ_2 are bigger than zero. So, second (6.8.2) and third (6.8.3) Kuhn-Tucker conditions indicate that $Q_c = 0$ and $Q_c = Q$. Since $Q = 0$, it is not possible to allocate agricultural lands to production for the industry without having any agricultural land that will be cultivated submitting to Farmer Registration System. Also, $Q_c = 0$ violates the first constraint which is $Q_c > 0$.

In the second case, the second constraint is binding but the first constraint is not active. Thus, $\lambda_1 = 0$ and $\lambda_2 > 0$. Because the third Kuhn-Tucker condition (6.8.3) implies $Q_c = Q$ and it contradicts with the second constraint, $Q_c < Q$, there is no participant point that maximizes the objective function in the second case.

In the third case, the first constraint is binding but the second one is not. Therefore, $\lambda_1 > 0$ and $\lambda_2 = 0$. Because the second Kuhn-Tucker condition (6.8.2) implies $Q_c = 0$ and it contradicts with the first constraint, $Q_c > 0$, there is no participant point that maximizes the objective function in the third case as well.

In the fourth case, both constraints are not binding. Thus, $\lambda_1 = \lambda_2 = 0$ and $0 < Q_c < Q$. When we rewrite the first Kuhn-Tucker condition (6.8.1) by using the Equations 6.9 - 6.13 and the values of λ_1 and λ_2 , it will look like as follows:

$$\begin{aligned} \frac{(0.9) \cdot P_c \cdot \delta_c}{Q_c^{0.1}} &= \frac{E[P_m] \cdot (\beta_f - \beta_u) \cdot \delta_m \cdot (Q - Q_c)^{0.9}}{A \cdot \left[1 + (Q - Q_c)/A\right]^2} \\ &+ \frac{(0.9) \cdot \delta_m \cdot \left[\left((Q - Q_c)/A\right) \cdot \beta_f \cdot E[P_m] + \beta_u \cdot E[P_m] \right]}{\left[1 + (Q - Q_c)/A\right] \cdot (Q - Q_c)^{0.1}} \end{aligned} \quad (6.14)$$

The value of Q_c that equates both sides of Equation 6.14 is the optimal size of the agricultural lands allocated to production for the industry to maximize the objective function given the parameters. Since an analytical solution is not possible,

numerical examples will be generated in the third subchapter below to analyze the outcomes of the model.

6.2 Second stage

As stated at the beginning of Chapter 6, the second stage of the model represents the harvesting period when the producers start to bargain with the traders to sell their products harvested from the agricultural lands allocated to the production for the market. Since the size of land allocated to the production for the industry has been decided in the first stage considering the offer of the firms, expectations regarding the prices and revenues that can be taken during the harvesting period and other parameters in the model, the model in the second stage will be constructed upon this decision. So, the producer starts to contact traders to sell the produces harvested from the remaining lands ($Q_m = Q - Q_c$).

It is obvious that the uncertainty about the prices in the first stage will disappear to a large extent when the harvesting seasons start in different regions. Before, the producer had been forecasting upper (P_u) and lower bounds (P_l) of the expected price level by considering the information about the prices in the previous year, seed sales, and the size of agricultural lands cultivated in the other regions where seedtimes come before that of his province. Now, the producers update these bounds with new information gathered from regions where the first harvest and sales were realized. Let P'_u and P'_l be the updated upper and lower bounds of price levels, respectively. So, rather than assigning probabilities to upper and lower bounds as in the first stage, the producer knows that prices change between these bounds.

Before constructing the objective function and optimization problem of the producer in the harvesting season, it is necessary to mention about one more issue

regarding the strength of his network (z). Previously, z has been defined as a function of $(Q - Q_c)$, and the average size of land dedicated to production for selling traders by other producers (A). However, during the negotiation with traders in his network, the price that the producer demands (P_y) causes a change in the strength of his network since the producer might lose some of the traders in his network for the current harvest season because of the high price he demands compare to the average price that other farmers in his region demand ($\bar{P}$). Thus, z can be written including the effect of the price that the producer demands on the strength of his network as follows:

$$\hat{z} = \frac{(Q - Q_c)/A}{(P_y - \bar{P}) + (Q - Q_c)/A} \quad (6.15)$$

where $\hat{z} \in (0,1)$ and

$$A = \frac{1}{n} \sum_{i=1}^n (Q_i - Q_{c_i})$$

Since it is known that the producer has decided to allocate Q_c^* decarees agricultural lands to production for firms (contract farming), the following version of $\hat{z}$ can be used from this point on:

$$\hat{z}(P_y|Q_m^*) = \frac{Q_m^*/A}{(P_y - \bar{P}) + Q_m^*/A} \quad (6.16)$$

where $Q_m^* = Q - Q_c^*$

Along with the strength of the network, the concept of bargaining power is also important for price formation during the negotiation between producers and traders. Since producers and traders are not equal in terms of bargaining power, we need to introduce asymmetry in bargaining power to the model. In line with this

purpose, the Nash bargaining model under asymmetry will be used (Binmore, Rubinstein, & Wolinsky, 1986). Also, the conceptualization and notations of Ranjan will be adopted (Ranjan, 2017).

Let $0 < \theta < 1$ represents the bargaining power of the producer and P_x stands for the price agreed upon after the negotiation between producers and traders. Bearing in mind that P'_l is the current lower bound of the prices and P_y is the price level that the producer demands, the surplus of the producer and the trader can be defined in Equations 6.17 and 6.18, respectively.

$$S_P = P_x - P'_l \quad (6.17)$$

$$S_T = P_y - P_x \quad (6.18)$$

The product of surpluses weighted with the bargaining power of the producers and traders will look like as indicated below:

$$(P_x - P'_l)^\theta \cdot (P_y - P_x)^{(1-\theta)} \quad (6.19)$$

In order to maximize the product, let us take the first derivative of it with respect to P_x and solve for P_x .

$$P_x = \theta \cdot P_y + (1 - \theta) \cdot P'_l \quad (6.20)$$

The equation above means that an increase in price that the producer demands (P_y) can reflect in P_x based on his bargaining power. Similarly, the effect of the lower bound of the prices on P_x depends on the bargaining power of the trader. The revenue generated from one kilogram of potato sale to traders has been written in Equation 6.21. The construction and interpretation of Equation 6.21 are similar to that of Equation 6.3. However, in this case, the bargaining power of the producer and the

price that the producer demands get involved to the formation of the revenue rather than the probabilities assigned to expected upper and lower bounds of the prices.

$$R_m = \hat{z} \cdot \beta_f \cdot [\theta \cdot P_y + (1 - \theta) \cdot P'_l] + (1 - \hat{z}) \cdot \beta_u \cdot [\theta \cdot P_y + (1 - \theta) \cdot P'_l] \quad (6.21)$$

$$\text{where } \hat{z}, \beta_f, \beta_u \in (0,1)$$

Now, using parameters defined above, the maximization problem during the harvesting season faced by the producer who uses two marketing channels (sales to firms and traders) can be written as follows:

$$\max_{P_y} R_m \cdot q(Q_m^*) - c(Q_m^*) \quad (6.22)$$

where

$$R_m = \hat{z} \cdot \beta_f \cdot [\theta \cdot P_y + (1 - \theta) \cdot P'_l] + (1 - \hat{z}) \cdot \beta_u \cdot [\theta \cdot P_y + (1 - \theta) \cdot P'_l]$$

$$\hat{z} = \frac{Q_m^*/A}{(P_y - \bar{P}) + Q_m^*/A}$$

$$q_m(Q_m^*) = (1.5) \cdot \delta_m \cdot Q_m^{*0.9}$$

$$c(Q_m^*) = c \cdot Q_m^*$$

The producer wants to maximize his profit gained from sales to traders during the harvesting season by choosing the price that he demands, P_y . In order to solve the maximization problem, it is necessary to take the first derivate of the objective function with respect to the choice variable, P_y . Firstly, let us calculate the required derivatives.

$$\frac{\partial \hat{z}}{\partial P_y} = - \frac{Q_m^*/A}{((P_y - \bar{P}) + Q_m^*/A)^2} \quad (6.23)$$

$$\frac{\partial P_x}{\partial P_y} = \theta \quad (6.24)$$

Using the derivatives above, the first derivative of the objective function with respect to the choice variable P_y can be written as follows:

$$\begin{aligned} q(Q_m^*) \cdot (\beta_f - \beta_u) \cdot \left[\left(-\frac{Q_m^*/A}{((P_y - \bar{P}) + Q_m^*/A)^2} \right) \cdot [\theta \cdot P_y + (1 - \theta) \cdot P_l'] \right. \\ \left. + \left(\frac{Q_m^*/A}{((P_y - \bar{P}) + Q_m^*/A)} \right) \cdot \theta \right] + q(Q_m^*) \cdot \beta_u \cdot \theta = 0 \end{aligned} \quad (6.25)$$

When Equation 6.25 is reorganized, the following equation will be attained:

$$\begin{aligned} \frac{(\beta_f - \beta_u) \cdot (Q_m^*/A) \cdot \theta}{\left((P_y - \bar{P}) + \frac{Q_m^*}{A} \right)} + \beta_u \cdot \theta \\ = \frac{(\beta_f - \beta_u) \cdot (Q_m^*/A) \cdot [\theta \cdot P_y + (1 - \theta) \cdot P_l']}{\left((P_y - \bar{P}) + \frac{Q_m^*}{A} \right)^2} \end{aligned} \quad (6.26)$$

The value of P_y that equates both sides of Equation 6.26 is the optimal price that the producer demands to maximize the objective function given the parameters. Since an analytical solution is not possible, numerical examples will be generated in the following subchapter to analyze the outcomes of the model along with the outcomes of the model in the first stage.

6.3 The results

In this subchapter, the outcomes of two models that represent two stages of the marketing process of potato producers in Çorum province who sell their products to both firms and traders will be analyzed. Since the analytical solutions of the models are not possible, numerical examples will be constructed. Through numerical examples, behaviors of potato producers will be investigated when the parameters of

the models change. The optimal solutions of the choice variables and other variables that depend on them will be calculated by utilizing Excel functions.

As indicated in Chapter 1, the main focus of the study is finding out the reasons behind the downwardly pressured producer price level which has been commonly mentioned in the literature. Throughout the numerical examples, changes in four parameters and their effects on the price that the producer demands will be observed. These parameters are the price offered by the firm (P_c), the ratio of the total payment made by familiar traders without delay or fraud (β_f), the updated lower bound of the prices during the harvesting period (P_l'), and the average price that other producers demand ($\bar{P}$).

The producer begins the marketing process with the decision regarding the size of the agricultural lands allocated to the production for the industry (Q_c) at the beginning of the seedtime. Therefore, the effect of the parameters mentioned in the previous paragraph initially materialize in the first stage of the marketing process. Then, there will be some implications of the changes in the parameters on the optimal choice of the second stage either directly or indirectly. So, the interpretations of the results in the following cases will firstly concentrate on the first stage and then, the second stage.

In the first case, it has been detected the change caused by the price offered by the firms (P_c) in the size of agricultural lands allocated to the production for the industry (Q_c) and the market (Q_m). The parameters of the first case are written in Appendix B, Table B1. Assuming that other parameters are constant, the response of the producer in terms of Q_c towards the different prices offered by the firm (P_c) is given in Figure 12. As expected, the producer prefers to increase the size of

agricultural lands allocated to the production for the industry when the price offer of the firm (P_c) increases.



Figure 12. The effect of the price offer of the firm on the allocation of the agricultural lands

The goal of the second case is figuring out the variation in the response of the producer in terms of Q_c towards the changes in the price offer of the firm because of the different values of the ratio of the total payment made by familiar traders without delay or fraud (β_f). Four different values were assigned to β_f , and four subcases have been constructed under the second case. The parameters of the second case and the subcases can be found in Appendix B, Table B2. Figure 13 shows the effects of the changes in P_c on the Q_c for different values of β_f . As seen in Figure 13, the producer increases the size of the agricultural lands allocated to the production for the firm under contract farming (Q_c) because of the decrease in β_f . Lower β_f means that familiar traders in the network of the producer pay the smaller share of the total payment without delay or fraud. The producer who observes the change in the

behavior of the familiar traders in his network prefers to allocate less agricultural lands to the production for the market where the traders are dominant.

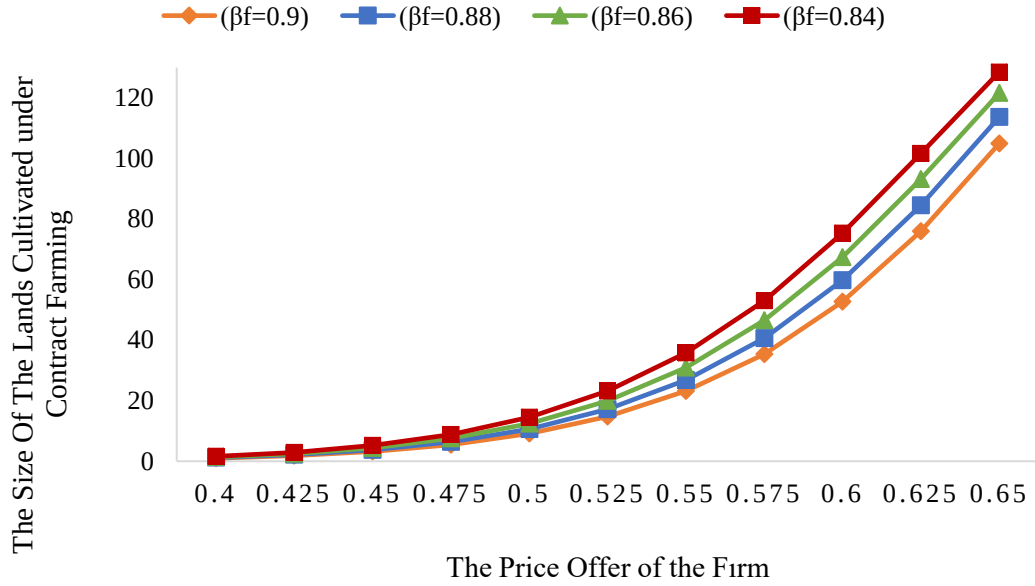


Figure 13. The effect of the price offer of the firm on the allocation of agricultural lands for various scenarios where familiar traders acts differently in terms of payment

The first result of the change in the behavior of the familiar traders is the smaller agricultural lands allocated to the production for the market (Q_m). However, it has a secondary implication on the network of the producer (z). Since the network of the producer (z) has been defined as a function of the size of agricultural lands allocated to the market (Q_m) and the average size of the agricultural lands allocated to the market by the other potato producers in the region (A), lower β_f causes weak network through the decision about the allocation of the lands made by the producer. So, the network of the producer (z) who prefers to allocate a smaller size of agricultural lands to the production for the market weakens. Figure 14 presents the strength of the network of the producer (z) for each subcase defined under the second case when the price offer of the firm equals 0.6.

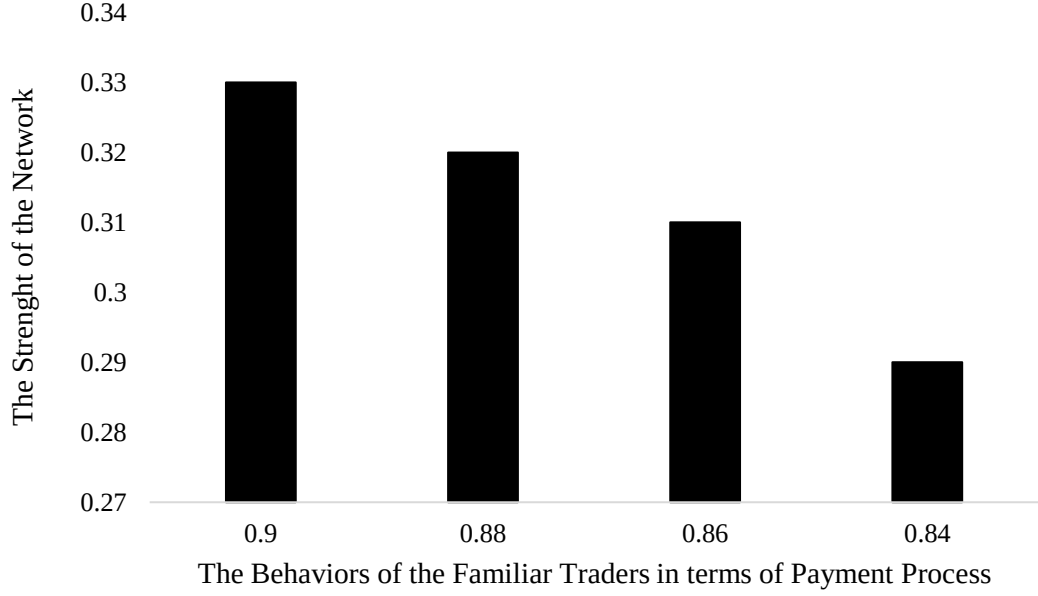


Figure 14. The effect of the change in the behaviors of the familiar traders in terms of payment on the strength of the network of the producer through allocation of the agricultural lands

In the second stage of the marketing process which is selling to the traders during the harvesting season, the optimal price that the producer demands (P_y) during the negotiation with the trader will be computed given the results obtained in the first stage regarding the optimal Q_c , and the strength of the network z for each subcase.

Figure 15 indicates the optimal P_y 's for four different cases defined above. A decrease in the ratio of the total payment made by the familiar traders without delay or fraud (β_f) causes a decline in the size of agricultural lands allocated to the production for the market (Q_m) in the first stage of the marketing process. Then, lower Q_m weakens the network of the producer (z). Since z defines the probability that the producer works with the familiar trader in the second stage of the marketing process, and the ratio of the total payment made by the unfamiliar traders without delay or fraud (β_u) is lower than that of the familiar traders, the producers want to keep his network strong as much as possible.

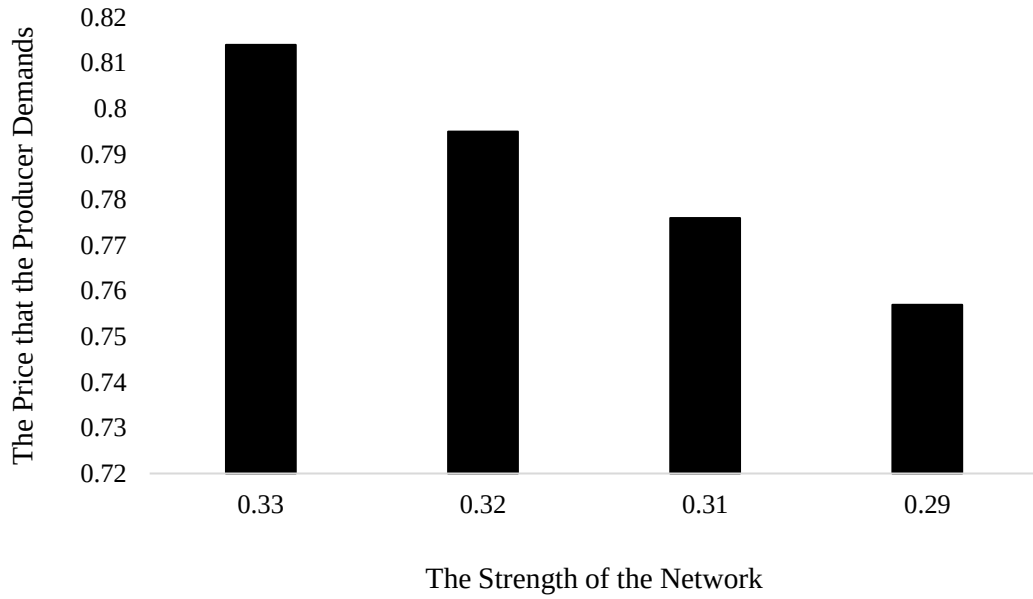


Figure 15. The effect of the strength of the network on the optimal price that the producer demands

In the second stage of the marketing process, there exists one more determinant that affects the strength of the network. It is the price level that the producer demands (P_y) compared to that of other producers ($\bar{P}$) during the negotiations with the traders. So, the producer has got a trade-off. He can either increase P_y to get higher revenues or keep P_y lower to not lose his network. In order to balance this trade-off, he needs to decrease P_y compared to other cases where his network is stronger. This conclusion of the model constitutes the first reason of the downwardly pressured producer prices at the farm gates.

The third case among the numerical examples focuses on the second stage of the marketing process. As mentioned in Chapter 6, the upper (P_u) and the lower (P_l) bounds of the prices may be updated because of the new information gathered by the producers, unexpected change in the supply, new policies regarding the foreign trade, etc. Therefore, the first thing that will be investigated in the third case is the effect of a change in the lower bound of the prices (P'_l) on the optimal P_y . The parameters of

the third case can be found in Appendix B, Table B3. Figure 16 shows the optimal P_y 's for different values of the lower bound of the prices (P_l').

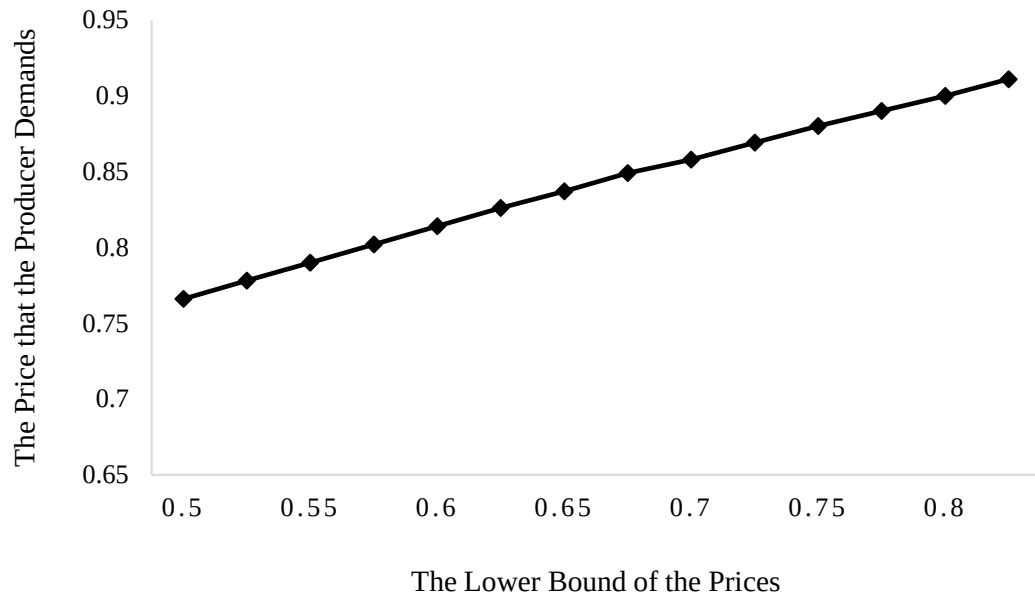


Figure 16. The effect of the lower bound of the prices on the price that the producer demands

As expected, an increase in the lower bound of the prices (P_l') leads to higher prices demanded by the producer (P_y) during the bargaining with the traders.

However, the price that the producer demands (P_y) during the negotiation has increased by only 15% although there exists a nearly 40% increase for the lower bound of the prices (P_l').

In order to understand the reason for the restricted increase in the prices demanded by the producer, let us consider another case. In the fourth case, an increase in the average prices that other producers demand ($\bar{P}$) during the negotiations accompanies the increase in the lower bound of the prices (P_l'). The parameters of the fourth case can be found in Appendix B, Table B4. The effect of the simultaneous increase in both prices on the price that the producer demands is demonstrated in Figure 17.

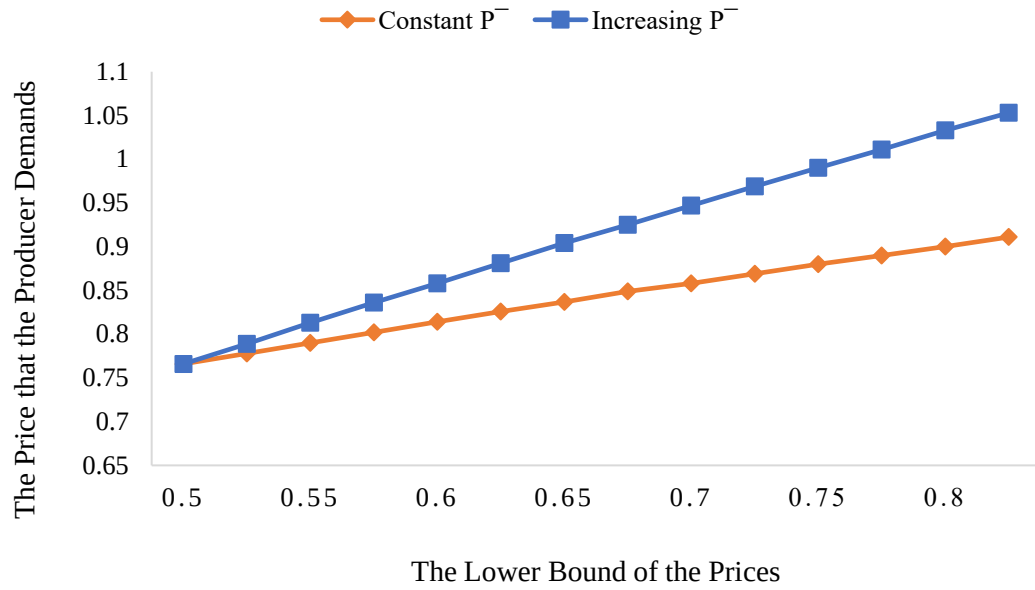


Figure 17. The effect of the increase in the lower bound of the prices and the average prices demanded by other producers on the price that the producer demands

Although the price that the producer demands (P_y) during the negotiation has increased by only 15% when the average price demanded by other producers ($\bar{P}$) is constant, the increase in P_y reaches to 37.5% in the case of increasing $\bar{P}$. Hereby, lack of joint action among the producers in the region regarding the price demanded constitutes the second important reason behind the downwardly pressured prices at the farm gates. The producer, by himself, cannot increase the price that he demands during the negotiations (P_y) as much as the increase in the lower bound of the prices (P'_l). The response of the other producers in the region toward the increase in the lower bound of the prices (P'_l) is also crucial for the price formation at the farm gates. If other producers prefer to keep the price they demand constant, the producer has to keep the increase in the price he demands restricted in order to not lose a part of his network. This is because of the fact that a higher difference between the prices demanded by the producer and that of others lead to a loss in the network of the producer.

CHAPTER 7

CONCLUSION AND DISCUSSION

The motivation behind the study was the downwardly pressured producer prices in contrast with the consumer prices which has been confirmed by numerous reports, articles, and field works mentioned both in Chapters 1 and 2. Bearing the fact regarding the producer prices in mind, it has been focused on the following questions throughout the study: What are the sales channels available for producers? How do the interactions take place between producers and buyers in each sales channel? Which properties of the sales channels might pressure the producer prices downward?

In order to narrow down the scope of the study because of the reasons discussed in Chapter 1, the potato sector in Çorum province has been selected as the field of the study. The questions in the previous paragraph have been answered by utilizing the interviews conducted with 35 producers, four traders, two municipal policemen, and a manager of the wholesale market. The findings of the producers' interviews have been presented in Chapters 4 and 5. Since the marketing process of the potato producers is the main concern of the study, a separate chapter has been dedicated to the sales channels of the producers. The information gathered from the interviews with the other actors has been employed in relevant parts throughout the study.

Based on the fieldwork and the interviews, the marketing process of the producers who sell their products both to traders and firms has been modeled with a two-stage optimization problem. In the first stage, the producer chooses the optimal size of the agricultural lands allocated to the production for the industry given the

parameters such as the price offered by the firms and the expectation regarding revenue that will be generated from the sales to the traders. In the second stage of the marketing process, the producer decides the optimal price level that he bargains during the negotiations with the traders given the allocation of agricultural lands realized in the first period, the strength of the network which is endogenously determined, the other parameters such as the decision of the other producers about the price level that they will bargain and the behaviors of the traders regarding the payment process.

Since the analytical solutions of the models are not possible, numerical examples have been constructed. Through numerical examples, behaviors of potato producers have been observed when the parameters of the models change. According to the optimal decisions made by the producers in both stages of the marketing process computed for different cases, there exist three prominent factors that provide some explanations for the downwardly pressured producer prices. These are the behavior of the familiar traders in the payment process (β_f), the strength of the network of the producer (z), and the degree of the joint action among the producers which can be represented by the difference between the price that the producer bargain during the negotiations and that of other producers ($P_y - \bar{P}$).

If the familiar traders in the network of the producer start to pay less amount of the total payment on time or without delay, the producer tends to allocate a bigger size of agricultural land to the production for the industry in order to avoid the problems with traders regarding the payment process. This decision results in a loss of the part of his network because the producer cultivates less agricultural lands for the market anymore and the network is an increasing function of the size of agricultural lands allocated to the production for the market. The producer does not

prefer to have a weak network because otherwise, he needs to contact with unfamiliar traders who pay less amount of the total payment on time or without delay compared to that of familiar traders. Therefore, the producer chooses to decrease the price that he demands in order to keep the current familiar traders inside his network. The process mentioned above provides a possible explanation for the downwardly pressured producer prices through the problems in the payment process they face, and the concerns about the loss of the network which is crucial for the sales to the traders.

Another case considered in Chapter 6 deals with the response of the producers towards an increase in potato prices. If the other producers do not increase the price they demand during the negotiation in response to higher prices realized in the neighboring regions, the producer, by himself, cannot demand higher prices from the traders. Otherwise, he will face a loss of the network because of the relatively high prices he bargains. The model shows that a 40% increase in the lower bound of the prices in the neighboring regions leads to only a 15% increase in the price that the producer demands during the negotiations when the average price demanded by other producers is constant. However, the producer can increase the price he demands by 37.5% in the case where average prices demanded by other producers and the lower bound of the prices simultaneously increase. This result of the model indicates another possible explanation for the downwardly pressured producer prices.

The findings of the fieldwork and the results reached through the model indicate that the dependence of the producers on the familiar traders in their network, the absence of the legislative regulations and institutions that provide fast solutions for the payment problems the producers face, and the lack of joint act among potato producers are the possible reasons for the downwardly pressured producers prices in

the potato sector of Çorum province. In the following paragraphs, a couple of policy suggestions will be made based on the explanations in the previous parts.

The network of the producer has an important role in the explanations regarding the downwardly pressured producer prices as discussed before. The importance of the network arises from the difference in the behaviors of familiar and unfamiliar traders regards to the payment process. As repeatedly mentioned before, familiar traders generally make the payment on time and without fraud although the producers may face delays or frauds in the payment process while working with unfamiliar traders. In the case of payment delays or frauds, producers can apply to the arbitration court of the wholesale market. However, during the fieldwork, it is observed that producers prefer to deal by themselves with traders who have not made the payment rather than applying the court because of the long legislative process. Therefore, it is necessary to improve the current structure of the arbitration courts and legislative process in order to ease and accelerate the legislative process in the case of payment delays or frauds. If producers make sure that they will take their payment from both familiar and unfamiliar traders after the required improvements in legislations, they will not be dependent on the familiar traders in their network because of the worries regarding the payment. Also, they will have chances to improve their network with unfamiliar traders since they know that legislative regulations provide fast solutions in the case of payment delays and frauds. These changes in the marketing process eliminate one of the important reasons for the downwardly pressured producer prices.

There is one more policy implication that is complementary to the policy suggestion regarding the payment problems in the previous paragraph. This policy is to prevent unofficial rental contracts. As mentioned before, 58% of the producers

who cultivate rented agricultural lands in the sample do not have official rental contracts. The producers who do not have official rental contracts cannot submit the production in those rented agricultural lands to the Farmer Registration System on their behalf. Since their production cannot be seen in the system on their behalf, they also will not be able to apply the arbitration court of the wholesale market if they face payment problems. So, it is necessary to ensure that all rental contracts are official. Otherwise, the producers who have unofficial rental contracts cannot utilize improved legislative regulations. In other words, the first and second policy suggestions are complementary and must be realized at the same time to solve the problems regarding the payment process.

Before suggesting a solution for the lack of joint act among potato producers which decreases the price demanded by the producers at the farm gates, it is necessary to mention a couple of issues. In Turkey, the current producers' unions are not effective in the marketing process of agricultural foods (Akder, Erol, Sürmeli, & Veziroğlu, 2020). Thus, their members generally cannot act jointly while deciding the prices they demand. Ranjan (2017) states that producers' unions can increase the price gained by their members if they are homogenous in terms of bargaining power. Also, the cooperation among the producers increases with the common ethnicity and religious cult (Yücer, 1999). When these findings are considered along with the observation during the fieldwork that potato producers in Alawites villages of Çorum province can agree on the same prices while negotiating with the trader thanks to common action, it can be suggested to open more homogeneous producers' unions in terms of bargaining power, ethnicity, and religious cult in the first step. This kind of producers' unions may help to increase producer prices even if they are on a small scale. In the next steps, the producers in the homogenous unions who have been

experienced success to some extent and developed trust each other will be more open to cooperation with other unions whose members produce the same agricultural product.

To sum up, the suggested policies can be listed as follows:

- i. The current structure of the arbitration courts of the wholesale markets needs to be revised and the legislative process about the payment delays or frauds must be eased and accelerated.
- ii. Currently, the arbitration courts deal with only the issues between the producers and the traders who have workplace inside the wholesale markets. However, the realm of the authority of the arbitration courts should be extended and these courts must deal with the problems between the producers and the traders who are working outside the wholesale markets as well.
- iii. The producers should be informed about the steps to follow when they face payment problems and they must be confident that these problems will be resolved in a short time.
- iv. It must be ensured that all rental contracts are officially formed.
- v. The owners of agricultural lands who lay down taking subsidies on their behalf as a condition of renting must be penalized.
- vi. Homogenous (in terms of bargaining power, ethnicity, and religious cult...) producers' unions or agricultural cooperatives should be established even if they are on a small scale. These establishments help producers to adopt the cooperative culture and to eliminate their mistrust towards the producers' unions and cooperatives.
- vii. These producers' unions or agricultural cooperatives must be active in the marketing process of the agricultural products and ensure that all members

act jointly while deciding the prices demanded during the negotiation with the traders.

- viii. In the next steps, the cooperation among the established and successful producers' unions or agricultural cooperatives whose members have trusted in the efficiency of their unions and cooperatives should be developed. Merging with other unions or cooperatives considering the homogeneity may be seen as a better option for their members. This kind of cooperation and merging will increase the bargaining power of their members.

Finally, the current study can be improved in various aspects. One of them is increasing the number of interviews with both producers and traders. Secondly, it will be beneficial to construct an empirical model by using a bigger sample in order to test the result of the models and the conclusions derived from them. Thirdly, modeling the marketing process of the other type of producers who sell their products to the traders and in the market stalls makes the study more comprehensive and gives the chance to compare the behaviors of different types of producers in various scenarios. Lastly, improving the model in terms of production costs and subsidies can help to make welfare analysis.

APPENDIX A

THE INTERVIEWS

THE PRODUCER'S INTERVIEW (Üretici Mülakatı)

Demographic Information (Demografik Bilgiler)

Province : (İl)	District : (İlçe)	Village: (Köy)
Age : (Yaş)	Gender: (Cinsiyet)	Education : (Eğitim)
Marital Status : (Medeni Durum)	Married ☐ (Evli)	Single ☐ (Bekâr)
The Number of People in the Household : (Hanedeki Kişi Sayısı)	... Kişi ... (People)	

Characteristics of the Agribusinesses (Tarım İşletmelerinin Özellikleri)

1. How many years have you been engaged in agriculture?
(Kaç yıldır tarım ile uğraşıyorsunuz?)
2. Is farming your father's profession? (Çiftçilik baba mesleğiniz mi?)
3. How many people in your family help you with agriculture?
(Ailenizden kaç kişi tarım işinde size yardımcı oluyor?)
4. Do you have any additional source of income? If there exists, what is it?
(Başka bir geçim kaynağınız var mı? Varsa nedir?)
5. What is the size of the agricultural land you have cultivated?
(Ne kadarlık bir alanda üretim gerçekleştiriyorsunuz?)
6. Whether the agricultural lands you cultivated are one-piece or consist of multiple pieces?
(Bu alan tek parça mı yoksa birbirinden ayrı parçalardan mı müteşekkil?)
7. What is the size of the agricultural lands which are rented and owned by you?
(Üretim gerçekleştirdiğiniz alanın ne kadarı size ait ne kadarı kira?)

- 7.1. What are the duration of the rental contract and the rent you agreed on?
(*Ne kadar süre için ve kaç arazileri kiralyorsunuz?*)
8. What is the size of agricultural lands where you produce potatoes?
(*Toplam alanın ne kadarına patates dikiyorsunuz?*)
- 8.1. Which products do you cultivate in the rest of the agricultural lands?
(*Arazinizin kalan kısmına ne / neler ekiyorsunuz?*)
- 8.2. What is the size of the agricultural lands where you cultivated potatoes in the last three years?
(*Geçtiğimiz üç yılda ne kadarlık bir alana patates ekmişsiniz?*)
- ☐ 2019 ...
- ☐ 2018 ...
- ☐ 2017 ...
- 8.3. How do you decide the types of product you will cultivate?
(*Hangi ürünü ekeceğinize nasıl karar veriyorsunuz?*)
- ☐ Considering the prices in the previous year
(*Bir önceki yılın fiyatlara bakarak*)
- ☐ Considering the products cultivated by other farmers
(*Diğer çiftçilerin ne ektiğine göre*)
- ☐ I cultivate the same agricultural products regardless of other farmers and the conditions of the market
(*Piyasadan ve diğer çiftçilerden bağımsız olarak hep aynı ürünleri ekiyorum*)
- ☐ ...
9. Are you a member of any cooperative / producers' union?
(*Herhangi bir kooperatif / üretici birliğine üye misiniz?*)
10. What are the services and benefits provided by your cooperative / producers' union?
(*Üye olduğunuz kooperatif / üretici birliği size hangi hizmetleri sunuyor, ne gibi faydaları var?*)
11. What are the negative aspects of your cooperative / producers' union?
(*Üye olduğunuz kooperatif / üretici birliğinin memnun olmadığınız yanları nelerdir?*)

Seeding and Harvesting Process

(Üretim ve Hasat Süreci)

12. What are the inputs required for the production and how do you provide these inputs?
(Üretim için gerekli olan girdileriniz nelerdir ve bunları nereden temin ediyorsunuz?)
13. Do you produce seeds needed for potato cultivation or buy from elsewhere?
(Patates ekimi için gerekli olan tohumu kendiniz mi üretiyorsunuz başka bir yerden mi satın alıyorsunuz?)
14. Which type of potato do you cultivate? (Hangi çeşit patates ekimi yapıyorsunuz?)
- ☐ For the market (Yemeklik)
 - ☐ For the industry (Sanayiye yönelik)
 - ☐ Seed production (Tohumluk)
 - ☐ ...
15. How often do you cultivate potatoes? (Patatesi kaç yıl arayla ekiyorsunuz?)
16. How many times do you cultivate potatoes in the year that you produce potatoes? What are the dates of these cultivations and harvests?
(Patates ektiğiniz yıllarda kaç kez ekim gerçekleştiriyorsunuz? Bu ekimler hangi tarihlerde gerçekleşiyor ve hasatları ne zaman yapılıyor?)
17. How do you harvest the potato? (Patatesi nasıl hasat ediyorsunuz?)
- ☐ With seasonal workers (Dönemlik işçilerle)
 - ☐ With semi-automatic machines (Yarı otomatik makinelerle)
 - ☐ With full automatic machines (Tam otomatik makinelerle)
 - ☐ ...
18. How long do you reap the products from the field during the harvesting period? How long can you keep the harvest in the agricultural land?
(Hasat dönemlerinde ürün tarladan ne kadar sürede toplanıyor? Mahsul en fazla ne kadar süre tarlanızda kalabilir?)
19. Do you need to store the harvested product, or you can sell them directly?
(Hasat edilen patatesi bir depoya kaldırma ihtiyacı duyuyor musunuz yoksa doğrudan satışını gerçekleştirebiliyor musunuz?)
20. Does the storage belong to you if you are using one?
(Eğer depoya kaldırıyorsanız kullandığınız depo size mi ait?)

21. How long do you keep the potato in the storage?
(*Patatesi depoda ne kadar süre tutuyorsunuz?*)
22. What is the rate of wastage for the stored potatoes?
(*Depolanan patatesteki fire oranınız nedir?*)

Sales Process and Price Formation
(*Satış Süreci ve Fiyat Oluşumu*)

23. When do you sell potatoes throughout the year?
(*Patates satışlarınız yılın hangi dönemlerinde gerçekleşiyor?*)
24. Do you sell potatoes through contract farming or other ways before the harvest?
(*Hasattan önce sözleşmeli tarım veya başka bir uygulama ile satış yapıyor musunuz?*)
25. Whom do you sell potatoes? What is the share of each buyer in the total potato sales if you sell potatoes to more than one buyer?
(*Patatesinizi kime satıyorsunuz? Eğer birden fazla yere satış yapıyorsanız her bir yere o yıldaki mahsulünüzün ne kadarını satıyorsunuz?*)
- | | |
|--|-------|
| ☐ To commissioners (<i>Komisyoncuya</i>) | % ... |
| ☐ To traders (<i>Tacirlere</i>) | % ... |
| ☐ To factories (<i>Fabrikalara</i>) | % ... |
| ☐ To the wholesale market (<i>Hale</i>) | % ... |
| ☐ To stallholders (<i>Pazarcıya</i>) | % ... |
| ☐ To producers' unions (<i>Üretici örgütlerine</i>) | % ... |
| ☐ To supermarkets (<i>Zincir marketlere</i>) | % ... |
| ☐ To consumers directly (<i>Doğrudan tüketiciye</i>) | % ... |
| ☐ I consume personally (<i>Kendim tüketiyorum</i>) | % ... |
| ☐ To abroad (<i>Yurtdışına</i>) | % ... |
| ☐ Through Internet (<i>İnternet üzerinden</i>) | % ... |
| ☐ I sell in the market stalls (<i>Pazarda kendim satıyorum</i>) | % ... |

26. In which provinces / districts do the buyers carry on their businesses? What is the share of the sale to each district in the total potato sales?
(Patatesinizi sattığınız kişiler genellikle hangi il / ilçelerde faaliyet gösteriyorlar? Her bir ilçenin toplam satışlarınızdan aldığı pay nedir?)

☐ Çorum % ...

☐ Kargı % ...

☐ Dodurga % ...

☐ Bayat % ...

☐ Mecitözü % ...

☐ Boğazkale % ...

☐ Osmancık % ...

☐ Oğuzlar % ...

☐ Uğurludağ % ...

☐ Ortaköy % ...

☐ Sungurlu % ...

☐ Laçın % ...

☐ İskilip % ...

☐ Merkez % ...

(Central District)

☐ Alaca % ...

☐ Other Provinces (Diğer İller) % ...

☐ ... % ...

☐ ... % ...

☐ ... % ...

27. Whether do you sell the same buyers or they differ from year to year?
(Patates satışı gerçekleştirdiğiniz kişi / firmalar yıldan yıla değişiklik gösteriyor mu yoksa hep aynı kişi / firmalara mı satış yapıyorsunuz?)

28. Do you have market stalls in the marketplaces? What do you need to do to have a market stall? What are the costs of selling in the marketplaces?
(Pazarda kendinize ait bir tezgâhınız var mı? Pazarda tezgâh sahibi olabilmek için ne yapmanız gerekiyor? Orada satış yapmanın maliyetleri nedir?)

29. What is the amount of potatoes you can sell in the marketplaces in one day? Is there any legislative regulation that restricts the quantity of sales?
(Pazarda bir günde ne kadar ürün satabilirsiniz? Satış miktarını sınırlandıran bir yasal düzenleme var mı?)

30. Do you have a workplace in the wholesale market? Is there any regulation that encourages the producers to rent a workplace in the wholesale market?
(Sebze meyve toptancı halinde dükkânınız var mı? Üreticilerin halde dükkân kiralamasını kolaylaştıran / teşvik eden düzenlemeler söz konusu mu?)

31. How are the prices determined while selling your products through one of the sales channels mentioned above? Could you explain the bargaining process?
(Bu satış kanallarının herhangi biri üzerinden ürününüzü satarken fiyatlar nasıl belirleniyor? Pazarlık sürecini anlatır mısınız?)

32. What are the factors you consider during the bargaining process?
(Pazarlık sırasında göz önünde bulundurduğunuz şeyler nelerdir?)

33. Does a buyer with whom you could not agree on the prices come to offer a new price?
(Fiyat hususunda anlaşamadığınız bir alıcı ilerleyen günlerde yeni bir teklif vermek için tekrar uğruyor mu?)

- 34.** When can you get the payment for the potatoes you sold?
(*Sattığınız patatesin ödemesini ne zaman alabiliyorsunuz?*)
- 35.** A person who buys wholesale your product needs to inform the wholesale market regarding the details about the seller and the prices realized. Have you experienced that a buyer submits a lower price than the price paid to you? Have you been phoned to receive confirmation from you regarding the prices and other details of the sale while you sell your products or after the sale?
(*Sizden ürününüzü toptan olarak satın alan birisi ne kadar ürünü kimden ve hangi fiyattan aldığını toptancı haline bildirmesi gerekiyor. Fiyatı bildirirken size ödediğinden daha düşük bir fiyat bildirimi yaptığına şahit oluyor musunuz? Ürününüzü satarken veya sattıktan sonra fiyat ve diğer hususlar hakkında teyit almak için sizi arayan oluyor mu?*)
- 36.** Are the factors you consider while deciding the price of the products you sell in the marketplaces the same with the ones during the bargaining with the traders? What are the different aspects of these sales channels in terms of price formation?
(*Pazarda satacağınız ürününüz için fiyat belirlerken göz önünde bulundurduğunuz şeyler, tüccar ile pazarlık sırasındakilerle aynı mı? Bu iki satış kanalının fiyatları belirleme noktasında farklı yanları var mı?*)
- 37.** Are you aware of the retail prices of the potato?
(*Patatesin perakende fiyatlarından haberdar mısınız?*)
- 38.** Where do you get the information if you know the retail prices of the potato?
(*Eğer haberdar iseniz bu bilgiyi kimden/nereden temin ediyorsunuz?*)
- ☐ I personally visit and learn (*Bizzat kendim gidip öğreniyorum*)
 - ☐ From commissioners (*Komisyoncudan*)
 - ☐ From traders (*Tacirlerden*)
 - ☐ From my cooperative (*Üyesi olduğum kooperatiften*)
 - ☐ From other farmers (*Diğer çiftçilerden*)
 - ☐ From retailers (*Perakendecilerden*)
 - ☐ ...
- 39.** Could you say that traders / commissioners provide true information to you regarding the market?
(*Tüccar / komisyoncuların piyasa hakkında sizlere doğru bilgiler sunduğunu söyleyebilir misiniz?*)

Costs and Financing
(Masraflar ve Finansman)

40. What are your cost items? What is the share of each cost item in the total cost?
(Masraf kalemleriniz nelerdir? Söz konusu her bir kalemin toplam masrafınız içindeki payı nedir?)

- | | | | |
|--|------|---|------|
| ☐ Seed (Tohum) | %... | ☐ Fertilizer (Gübre) | %... |
| ☐ Rent (Arazi Kirası) | %... | ☐ Irrigation (Sulama) | %... |
| ☐ Fuel Oil (Yakıt) | %... | ☐ Wages (İşçi Ücretleri) | %... |
| ☐ Taxes (Vergiler) | %... | ☐ Pesticides (İlaçlar) | %... |
| ☐ Electricity (Elektrik) | %... | ☐ Storage (Depolama) | %... |
| ☐ Agricultural Machinery (Tarım Makineleri) | %... | | |

41. How do you finance the costs mentioned above?
(Söz konusu masraflarınızı nasıl finanse ediyorsunuz?)

- ☐ Using the gains in the previous year (Bir önceki seneden kazandıklarım)
- ☐ With the advance payment made by commissioners
(Komisyoncudan gelen ön ödeme)
- ☐ With the advance payment made by traders (Tacirlerden gelen ön ödeme)
- ☐ With the advance payment within contract farming
(Sözleşmeli tarım ile gelen ön ödeme)
- ☐ With the credit provided by the cooperative (Kooperatif kredisi)
- ☐ With bank credits (Banka kredisi)
- ☐ ...

42. How is your situation in terms of debts? Have you ever faced a mortgage on your agricultural lands because of your credit debts?
(Borçluluk durumunuz nasıl? Kredi borçlarınız sebebiyle araziinize ipotek konulduğu oldu mu?)

43. Do you utilize any subsidies provided by the government? If there exists, what are they?
(Faydalandığınız herhangi bir devlet teşviki var mı? Varsa nelerdir?)

44. Do you get any subsidies specific to potato production provided by the government?
(Patates için ayrıca bir teşvik alıyor musunuz?)

- ☐ No, I do not get any subsidy. (Hayır, almıyorum.)
- ☐ The subsidy for using certified potato seeds (80 TL / Dekar)
(Sertifikalı patates tohumluğu kullanma desteği)
- ☐ The subsidy for producing certified potato seeds (0,10 TL / Kg)
(Sertifikalı patates tohumluğu üretme desteği)
- ☐ The subsidy for fertilizer (Gübre Desteği) (23 TL / Dekar)

THE TRADER'S INTERVIEW
(Tüccar Mülakatı)

Demographic Information
(Demografik Bilgiler)

Province : (İl)	District : (İlçe)	Village: (Köy)
Age : (Yaş)	Gender: (Cinsiyet)	Education : (Eğitim)
Marital Status : (Medeni Durum)	Married ☐ (Evli)	Single ☐ (Bekâr)
The Number of People in the Household : (Hanedeki Kişi Sayısı)	... People ... (Kişi)	

Characteristics of the Commercial Activities
(Ticari Faaliyetin Özellikleri)

1. How many years have you worked as a trader / commissioner?
(Kaç yıldır tüccar / komisyoncu olarak çalışıyorsunuz?)
2. Is trade your father's profession? Why did you prefer to be a trader / commissioner?
(Ticirlik / komisyonculuk baba mesleğiniz mi? Neden bu mesleği tercih ettiniz?)
3. Do you have a workplace in the wholesale market? Do you work outside the wholesale market?
(Sebze meyve halinde dükkânınız var mı yoksa hal dışında mı çalışıyorsunuz?)
4. Do you have any additional source of income? If there exists, what is it?
(Başka bir geçim kaynağınız var mı? Varsa nedir?)
5. Do you trade other agricultural products apart from the potato? If there exists, what is it?
(Patates haricinde ticaretini / komisyonculuğunu yaptığınız bir ürün var mı? Varsa nedir?)
 - 5.1. How do you decide on the agricultural products that you will trade?
(Hangi ürünün ticaretini / komisyonculuğunu yapacağınıza nasıl karar veriyorsunuz?)

6. Are you working alone? (Tek başınıza mı çalışıyorsunuz?)

6.1. What kind of partnership relation do you have with the people you work together?

(Birlikte çalıştığınız kişilerle nasıl bir ortaklık ilişkiniz var?)

6.2. How many people in your family help you with your job?

(Ailenizden kaç kişi işinizde size yardımcı oluyor?)

7. Are you a member of any trade / professional body? If your answer is yes, what is it? (Mensup olduğunuz bir meslek örgütü / birliği var mı? Varsa nedir?)

7.1. What are the advantages of being in the trade / professional body for you?

(Söz konusu meslek örgütünün / birliğin size ne gibi faydaları var?)

7.2. What are the negative aspects of your trade / professional body?

(Mensubu olduğunuz meslek örgütünün / birliğinin memnun olmadığınız yönleri nedir?)

Procurement of Potatoes and Price Formation at Farm Gates

(Patatesin Temini ve Üretici Fiyatlarının Oluşumu)

8. Where do you procure potatoes? What are the shares of each province / district in the total amount of potatoes you have procured in a season?

(Patatesi hangi il / ilçelerden temin ediyorsunuz? Söz konusu her bir yerden aldığınız patates miktarının bir sezonda temin ettiğiniz toplam patates miktarı içerisindeki payı nedir?)

☐ **Çorum** % ...

☐ Kargı % ...

☐ Dodurga % ...

☐ Bayat % ...

☐ Mecitözü % ...

☐ Boğazkale % ...

☐ Osmancık % ...

☐ Oğuzlar % ...

☐ Uğurludağ % ...

☐ Ortaköy % ...

☐ Sungurlu % ...

☐ Laçın % ...

☐ İskilip % ...

☐ Merkez % ...

(Central District)

☐ Alaca % ...

☐ **Other Provinces (Diğer İller)** % ...

☐ ... % ...

☐ ... % ...

☐ ... % ...

9. How do you procure potatoes? What is the share of the amount of potatoes procured by each method in the total amount of potatoes procured?
(Patatesi nasıl temin ediyorsunuz? Söz konusu her bir yolla temin ettiğiniz patates miktarının bir sezonda temin ettiğiniz toplam patates miktarı içerisindeki payı nedir?)
- ☐ I visit the producers and buy from them directly (Gidip çiftçiden kendim alıyorum)
- ☐ Through the middlemen in the production zone
(Üretim bölgesindeki ayakçılar üzerinden)
- ☐ ...
10. What is the payment you make to the middlemen when you do not visit the producers and buy potatoes from them directly?
(Patatesi bizzat kendiniz gidip temin etmediğinizde size aracılık eden kişilere ne kadar ödeme yapıyorsunuz?)
11. In which provinces / districts / villages do you generally need a middleman to procure potatoes?
(Genellikle hangi il / ilçe / köylerden patates temin ederken söz konusu aracılara ihtiyaç duyuyorsunuz?)
12. How do you decide on the middleman you will work with? Does the middleman you worked together differ from year to year? What are the reasons for the change?
(Hangi aracılar ile çalışacağınıza nasıl karar veriyorsunuz? Söz konusu aracılar yıldan yıla değişiklik gösteriyor mu? Değişiyorsa bu değişikliğin sebepleri nedir?)
13. In which provinces / districts / villages do you procure potatoes by visiting the producers yourself?
(Gidip kendiniz hangi il / ilçe / köylerden patates temin ediyorsunuz?)
14. How do you decide on the districts, villages, and the producers that you will procure potatoes? Is there any change in these regions and producers from year to year?
(Faaliyet göstereceğiniz ilçeye, köye ve birlikte çalışacağınız çiftçilere nasıl karar veriyorsunuz? Yıldan yıla bu yer ve kişilerde değişiklikler yaşıyor mu?)
15. Do you transport the agricultural products you buy directly from the producers by your own vehicles?
(Gidip çiftçiden patates satın aldığınızda nakliye işini kendi aracınız ile mi gerçekleştiriyorsunuz?)
16. When do you procure potatoes throughout the year?
(Patates satın alma işini yılın hangi dönemlerinde gerçekleştiriyorsunuz?)
17. What are the positive and negative aspects of two methods of procurement which are buying through middlemen and buying directly from the producers yourself?
(Patates teminini aracılar üzerinden yapmanın veya gidip kendinizin gerçekleştirmesinin olumlu ve olumsuz yönleri nelerdir?)

18. How do you determine the price while using each method of procurement? What are the factors you consider during the bargaining process?
(Gerek araçlar üzerinden gerekse gidip kendiniz çiftçiden patates temin ederken fiyatı nasıl belirliyorsunuz? Pazarlık sırasında göz önünde bulundurduğunuz şeyler nelerdir?)
19. When do you make the payment to the middlemen and producers?
(Üreticilere veya araçlara ödemeyi ne zaman gerçekleştiriyorsunuz?)
20. Are there other traders / commissioners who offer prices to the producers you negotiate with? If there exists, do you know the prices offered by them to the producers?
(Birlikte çalıştığınız çiftçilerin teklif aldığı başka komisyoncu / tüccar olup olmadığını ve eğer varsa diğerlerinin çiftçilere verdikleri teklifleri biliyor musunuz?)
21. Are there any other services you provide to the producers except finding the people / institution who will buy their potatoes?
(Patatesini satın alacak kişi / firmayı bulmak dışında çiftçilere sağladığınız başka bir hizmet var mı? Varsa nedir?)

Sales Process and Formation of Wholesale Prices

(Satış Süreci ve Toptan Fiyatlarının Oluşumu)

22. Whom do you sell potatoes? What is the share of each buyer in the total potato sales?
(Kimlere patates satıyorsunuz? Söz konusu kişi / firmalara yaptığınız satışların toplam satışlarınız içerisindeki payı nedir?)

- | | |
|--|-------|
| ☐ To the industry (Fabrikalara) | % ... |
| ☐ To wholesalers (Toptancı) | % ... |
| ☐ To stallholders (Pazarcılar) | % ... |
| ☐ To grocery stores (Bakkallar) | % ... |
| ☐ To greengrocers (Manavlar) | % ... |
| ☐ To supermarkets (Zincir marketler) | % ... |
| ☐ To the consumers directly (Doğrudan son tüketiciye) | % ... |
| ☐ ... | % ... |

23. In which provinces / districts do the buyers carry on their businesses? What is the share of the sale to each district in the total potato sales?
(Patates satışlarınızı gerçekleştirdiğiniz kişi / firmalar genellikle hangi il / ilçelerde faaliyet gösteriyor? Her bir ilçenin toplam satışlarınızdan aldığı pay nedir?)

☐ Çorum % ...

☐ Kargı % ...

☐ Dodurga % ...

☐ Bayat % ...

☐ Mecitözü % ...

☐ Boğazkale % ...

☐ Osmancık % ...

☐ Oğuzlar % ...

☐ Uğurludağ % ...

☐ Ortaköy % ...

☐ Sungurlu % ...

☐ Laçın % ...

☐ İskilip % ...

☐ Merkez % ...

(Central District)

☐ Alaca % ...

☐ Other Provinces (Diğer İller) % ...

☐ ... % ...

☐ ... % ...

☐ ... % ...

24. What are the factors you consider while determining the buyers?

(Hangi faktörleri göz önünde bulundurarak satış yapacağınız kişi / firmayı belirliyorsunuz?)

25. Whether do you sell the same buyers or they differ from year to year?

(Patates satışı gerçekleştirdiğiniz kişi / firmalar yıldan yıla değişiklik gösteriyor mu yoksa hep aynı kişi / firmalara mı satış yapıyorsunuz?)

26. How do you decide the price you will demand from each buyer? Do you work with a constant profit / commission rate? Does the rate differ according to the buyer?

(Patates sattığınız her bir kişi / firmadan talep edeceğiniz fiyatı nasıl belirliyorsunuz? Sabit bir kâr / komisyon oranı ile mi çalışıyorsunuz yoksa satış yaptığınız kişi / firmaya göre kâr / komisyon oranı farklılaşıyor mu?)

27. Does the profit rate differ from year to year? If your answer is yes, what are the reasons for the change in the profit rate?

(Kâr oranınız yılda yıla değişiklik gösteriyor mu? Evet ise bu değişikliğin sebepleri nedir?)

28. Is there any legislative regulation that restricts the profit / commission rates? If there exists, what is it?

(Kâr / komisyon oranlarını sınırlandıran herhangi bir yasal düzenleme ve denetim var mı? Varsa nedir?)

29. What are the factors you consider during the bargaining process?

(Pazarlık sırasında göz önünde bulundurduğunuz şeyler nelerdir?)

30. When the buyers make the payment?

(Alicılar, sattığınız patatesin ödemesini ne zaman gerçekleştiriyor?)

31. Do you buy potatoes from the producers based on the orders you take? Do you start to search buyer after procuring potatoes?
(Belirli bir sipariş ile mi çalışıyorsunuz yoksa önce patatesi temin edip daha sonra elinizdeki ürüne alıcı mı buluyorsunuz?)

31.1. How do you determine the total amount of potatoes you will buy in a season if you firstly procure potatoes?
(Eğer öncelikle patatesi temin ediyor daha sonra ona alıcı buluyorsanız o sezon ne kadar patates alacağınıza nasıl karar veriyorsunuz?)

32. When do you sell potatoes throughout the year?
(Patates satışlarınız yılın hangi dönemlerinde gerçekleşiyor?)

33. Do you store the potatoes you have procured? If your answer is yes, what are the reasons for keeping potatoes in a storage?
(Temin ettiğiniz patatesleri depoda tutuyor musunuz? Cevabınız evet ise depoda tutmanızın sebepleri nelerdir?)

- 33.1.** Does the storage belong to you? (Kullandığınız depo size mi ait?)
33.2. What are the costs of keeping potatoes in a storage?
(Patatesi depoda tutmanın sizin için maliyetleri nedir?)
33.3. What kind of relationship exists between the prices and storing potatoes?
(Depoda patates tutmak ile fiyatlar arasında nasıl bir ilişki var?)

34. Until when can you keep potatoes in the storage at most?
(Temin ettiğiniz patatesi en fazla ne zamana kadar depoda tutabiliyorsunuz?)

Costs and Financing (Masraflar ve Finansman)

35. What are your cost items? What is the share of each cost item in the total cost?
(Masraf kalemlerinizi nelerdir? Söz konusu her bir kalemin toplam masrafınız içindeki payı nedir?)

36. How do you finance the costs mentioned above?
(Masraflarınız için gereken finansmanı nasıl sağlıyorsunuz?)

37. What are the taxes and other fees you need to pay to the government?
(Devlete vermekle yükümlü olduğunuz vergiler ve diğer ödemeler nelerdir?)

THE INTERVIEW WITH THE MANAGER OF THE WHOLESALE MARKET

(Hal Müdürü ile Mülakat)

It has been planned to ask information and opinions regarding the following points during the interview with the manager of the wholesale market:

(Hal müdürleriyle yapılacak mülakatlar sırasında aşağıdaki hususlar hakkında bilgi ve görüşlerinin talep edilmesi planlanmaktadır:)

1. Current Wholesale Market Act *(Mevcut Hal Yasası)*
2. The problems faced while implementing the Wholesale Market Act
(Yasanın uygulama aşamasında yaşanan sorunlar)
3. The precautions to overcome the problems mentioned
(Söz konusu sorunların aşılmasına yönelik alınan tedbirler)
4. The structure of the wholesale market *(Halin yapısı)*
 - a. The rents demanded for the workplaces in the wholesale market
(Haldeki dükkânların kiralari)
 - b. The Association of the Wholesale Market *(Hal Derneği)*
 - c. The Council of the Wholesale Market *(Toptancı Hal Konseyi)*
 - d. The Arbitration Court of the Wholesale Market *(Hal Hakem Heyeti)*
5. The organization of marketplaces in the province
(İldeki pazar yerlerinin organizasyonu)
6. Toplanan vergiler *(Taxes collected by the Municipality)*
7. The manner adopted by the producers, traders/commissioners, and the actors towards to the regulations
(Üreticilerin, tacirlerin, komisyoncuların veya diğer aktörlerin düzenlemeler, denetlemeler ve vergilere karşı tavrı)
8. Suggestions to solve current problems and establishing a more ideal system
(Daha ideal bir sistem inşa etmek için atılması gereken adımlar)

THE INTERVIEW WITH THE MUNICIPAL POLICEMEN (Zabıta Mülakatı)

It has been planned to ask information and opinions regarding the following points during the interview with the municipal policemen:

(Hal bünyesinde çalışan zabıtalarla yapılacak mülakatlar sırasında aşağıdaki hususlar hakkında bilgi ve görüşlerinin talep edilmesi planlanmaktadır:)

1. Job description and realm of authority *(Görev tanımları ve yetki alanları)*
2. The punishments in the case of violation of law
(Düzenlemelere uyulmadığı takdirde verilen cezalar)
3. The problems faced during the inspections
(Denetlemelerin yapılmasının sırasında karşılaşılan sorunlar)
4. The troubles experienced while imposing punishments
(Cezaların tatbik edilmesi aşamasında yaşanan aksaklıklar)
5. The manner adopted by the producers, traders/commissioners, and other actors towards to the regulations
(Üreticilerin, tacirlerin, komisyoncuların veya diğer aktörlerin düzenlemeler, denetlemeler ve vergilere karşı tavrı)
6. The relationship between stallholders and traders who have workplaces in the wholesale market
(Pazarcılar ve haldeki dükkân sahipleri arasındaki ilişkiler)
7. The relationship between producers and traders who have workplaces in the wholesale market
(Üreticiler ile haldeki dükkân sahipleri arasındaki ilişkiler)
8. Suggestions to solve current problems and establishing a more ideal system
(Daha ideal bir sistem inşa etmek için atılması gereken adımlar)

APPENDIX B

PARAMETERS OF THE MODEL

Table B1. The Parameters of the First Case

δ_c (Kg)	3000
δ_m (Kg)	2550
Φ	0.6
P_u (TL)	1.2
P_l (TL)	0.6
$\bar{P}$ (TL)	0.7
β_f	0.9
β_u	0.7
c (TL)	1300
θ	0.2
Q (decare)	200
A (decare)	300

Table B2. The Parameters of the Second Case

δ_c (Kg)	3000	
δ_m (Kg)	2550	
Φ	0.6	
P_u (TL)	1.2	
P_l (TL)	0.6	
$\bar{P}$ (TL)	0.7	
β_f	First subcase	0.9
	Second subcase	0.88
	Third subcase	0.86
	Fourth subcase	0.88
β_u	0.7	
c (TL)	1300	
θ	0.2	
Q (decare)	200	
A (decare)	300	

Table B3. The Parameters of the Third Case

δ_c (Kg)	3000
δ_m (Kg)	2550
Φ	0.6
P_u (TL)	1.2
P_c (TL)	0.6
$\bar{P}$ (TL)	0.7
β_f	0.9
β_u	0.7
c (TL)	1300
θ	0.2
Q (decare)	200
A (decare)	300

Table B4. The Parameters of the Fourth Case

δ_c (Kg)	3000
δ_m (Kg)	2550
Φ	0.6
P_u (TL)	1.2
P_c (TL)	0.6
β_f	0.9
β_u	0.7
c (TL)	1300
θ	0.2
Q (decare)	200
A (decare)	300

APPENDIX C

ETHICS COMMITTEE APPROVAL

Evrak Tarih ve Sayısı: 26/06/2020-60

T.C.
BOĞAZİÇİ ÜNİVERSİTESİ
SOSYAL VE BEŞERİ BİLİMLER YÜKSEK LİSANS VE DOKTORA TEZLERİ ETİK İNCELEME
KOMİSYONU
TOPLANTI TUTANAĞI

Toplantı Sayısı : 3
Toplantı Tarihi : 06/04/2020
Toplantı Saati : 14:00
Toplantı Yeri : Zoom Sanal Toplantı
Bulunanlar : Prof. Dr. Feyza Çorapçı, Dr. Öğr. Üyesi Yasemin Sohtorik İlkmen, Prof. Dr. Özlem Hesapçı
Karaca, Doç. Dr. Ebru Kaya, Prof. Dr. Fatma Nevra Seggie
Bulunmayanlar :

Safa Yıldırım
İktisat

Sayın Araştırmacı,
"ÜRETİCİLERİN PAZARLAMA SÜRECİNİN MODELLENMESİ: ÇORUM PATATES SEKTÖRÜ ÖRNEĞİ"
başlıklı projeniz ile ilgili olarak yaptığımız SBB-EAK 2020/07 sayılı başvuru komisyonumuz tarafından 6 Nisan
2020 tarihli toplantıda incelenmiş ve uygun bulunmuştur.

Bu karar tüm üyelerin toplantıya çevrimiçi olarak katılımı ve oybirliği ile alınmıştır. COVID-19 önlemleri
kapsamında kurul üyelerinden ıslak imza alınamadığı için bu onam mektubu üye ve raportör olarak Fatma
Nevra Seggie tarafından bütün üyeler adına e-imzalanmıştır.

Saygılarımızla, bilgilerinizi rica ederiz.

Prof. Dr. Fatma Nevra SEGGIE
ÜYE

e-imzalıdır
Prof. Dr. Fatma Nevra SEGGIE
Raportör

SOBETİK 3 06/04/2020

Bu belge 5070 sayılı Elektronik İmza Kanununun 5. Maddesi gereğince güvenli elektronik imza ile imzalanmıştır.

REFERENCES

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