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Farming development in response to urban expansion in Greece



Konstantinos Konstas
Wageningen University
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Farming development in response to urban expansion:

An exploratory study in Greece

Author:	Konstantinos Konstas
Registration number:	890109461020
WUR – Course code:	LUP-80436
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Study program:	MSc Urban Environmental Management
Supervisor:	Prof. Dr. LB Leonie Janssen-Jansen
Second reviewer:	Dr. MM Martha Bakker
Name and address of University:	Land Use Planning Group, Droevendaalsesteeg 3, 6708 PB Wageningen, The Netherlands
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Preface

Before you lies the thesis report “Farming development in response to urban expansion: An explorative study in Greece”. This paper is the outcome of my research to complete my master studies in Urban Environmental Management with a specialization at Land Use Planning. The topic combines both my interests and my working experiences till now. By conducting this research I have gained more knowledge and experiences than expected. However, in my conclusions I realized that there are much more to be investigated than what I have learned and hopefully this research will continue in the future.

I have a lot of people to thank for the support and the belief in me during my studies. Mostly my family and secondly my friends who did not only mentally supported me, but also provided ideas in order to realize this research. Moreover, the company that I used to work before I started my studies was very helpful since it provided me with a large data base of contacts. I also need to say a big thank you to all the people who accepted to be interviewed and assisted my in research. Last but definitely not least, special gratitude to my supervisor Leonie who was guiding my every step during the past six months.

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Abstract

Urban sprawl and urbanization are two major trends of the last half century. By 2050 it is expected more than 70% of the earth population to live in cities (Zhao, 2010). As people start to gather in urban areas and multiply in numbers their demand for agriculture products rise. But on the same time the urban expansion that occurs in order to host more and more people, it overtakes the farming land that is exploited for feeding the city. Eventually, while the croplands are decreasing, the farming society must reach the rising demand for food products. This trend is a global phenomenon that most of the countries face when shifting their economies from agricultural to industrial. It is the job of the planner to determine the limits of urban expansion and create regulations for where to develop each land-use.

Keywords: *Urban expansion, farming development, financial crisis, planning, reaction to land loss.*

Summary

The issue that this paper discusses is dealing with two opposing forces. On the one hand, it is observed that the population of the earth is increasing rapidly and people start to gather in the cities. As a result the demand for agriculture products has become an upward trend that does not seem to have a limit. Additionally, in order for the cities to host the steadily increasing population they need to expand, either in density or extent. However, the dense expansion has a limit and later it leads to expansion of the urban grid. When this phenomenon occurs, the surrounding land uses are overtaken by the cities. Eventually, this brings us on the other side where the agriculture land exists. Obviously if a city is getting larger, then the surrounding farming land is decreasing, which leads to the problem statement: the farmers need to reach the increasing demands in production with a decreasing amount of land in their service. This research aimed to investigate the perception of the farmers and their reaction when they experience a land loss.

Eventually the statement above drives to the research to its objective. Therefore the objective of this research will focus on the farmers' behavior and reaction to the changes that occur in their field. This research will aim to explore the actions that a farmer takes when urban expansion takes over a part of his farming land and it will emphasize on understanding the reasoning that drives him towards these actions. Additionally, the research will investigate which variables drive farmers to their actions and what are the impacts on farming productivity.

In regard with the research approach and the research methodology, two case areas in Greece were selected. It was decided to interview not only farmers but get general information from the planning department about the situation that occurs. Subsequently, thirty interviews with farmers were arranged and when the data was collected the coding and analyzing part began.

The results were close to the expectations but not precisely. It seems that the reactions of the farmers are depended significantly on several external and internal factors, such as the age, the location and extent of the farm and even the occupational status of the farmer.

Additionally, when it came to the point to ask about the probable reaction to land loss, the majority gave the same response which was to seek for new land and replace the gap.

However, what was not expected was that besides the most popular answer the rest of the responses were very distant to each other, which pointed out the individuality of the farmers. Finally, the last significant outcome was that the reduction of the available land will affect the labor of the farmers and the input of resources.

1. Introduction

What is urban? The truth is, that there is no general agreement among the world on the definition of what we can consider as urban and considerable differences in the classification of urban and rural areas exist among countries and continents (Elmqvist, 2014). However, Bugliarello's widely accepted definition will be endorsed for this research. In his definition, he addresses that an urban area is determined by its population, its built environment, its administrative boundaries and its functions (Bugliarello, 2006). Nonetheless, in this study, urban will be a place-based characteristic that is inhabited by people whose lives are organized around nonagricultural activities. The essential characteristic here is that urban means nonagricultural; whereas rural means any place that is not urban (Weeks, 2010).

Having clarified of what we can consider urban it is now essential to analyze the other end of the research, which is farming and the agriculture land. The average percentage of agricultural land among the European countries is reaching 50% of the overall land of the continent (World Statistics, 2016). This significant amount is used to supply the world with raw materials, mostly for food and secondary for clothing purposes (Smith, 1997). Each country produces diverse products depending on their climate and the capability and availability of their land.

However, in this paper Greece is going to be examined. The main farming products of Greece are wheat, corn and cotton from the extensive farms, olives, grapes, oranges and various of vegetables such as tomatoes and cucumbers from the intensive farms and finally dairy products, chickens and honey from the animal farms (Statistics.gr, 2017). The specific country has been chosen because agriculture is one of the main sources of profit and it is necessary for a sustainable continuation of the country. Not only because agriculture is a major sector of the national economy, but also because agriculture can be a way out of crisis¹ that has erupted in the last recent years. It is true that there is significant variety of products produced within the country, with high quality standards that gain great value when exported (Statistics.gr, 2016). Therefore, farming in this case is not only exploited for the needs of the Greek citizens but also for boosting the national economy.

¹ The Greek crisis: After thirteen years of economic expansion, Greece's Gross Domestic Product (GDP) started showing zero growth rates since the end of 2007 and negative growth rates from the fourth quarter of 2008 (Madianos et al., 2014). The first signs of the crisis appeared the year after and ever since the country has not recovered.

What led to the selection of this research topic was my past experiences with the farming society. To begin with, having an origin from a village implies a daily contact with the farmers and with their everyday problems. Moreover, I and my family consider ourselves as small scale farmers and we see farming as a secondary occupation that can provide fresh and healthy products to our diets and even a boost to our income. An interesting fact that created this idea for research is that several years ago we almost lost a part of our farming land due to the construction of a highway road nearby. However, after the construction we were benefited from the highway because the price of the land was boosted significantly. Eventually, we did not react to that change, thinking that it was more important keeping our productivity stable. Secondly, what is most valuable to be mentioned in this research is that through my career till now, I have been working with farmers for more than two years, a fact that made me capable to understanding their issues and maybe even their way of thinking too. From this experience it became obvious that many times the farming society considers urban expansion as an opposite force that threatens their interests.

Concluding, the focus of this research will be on the meeting point of these two different land functions, the urban areas and the farming land of Greece. Obviously, it is not possible to draw clear boarder lines between these two land uses, since concepts like the peri-urban zones and urban farming have already been developed. However, by this paper I will aim to investigate the results that occur after these two land uses merge, more specific when the urban part takes over the farming land. The main objective will be the farming society's reaction and the impacts of these spatial changes on them.

1.1. Problem description

Urban spatial expansion results mainly from three powerful forces: a growing population, the rising incomes and the improved transportation infrastructure (Brueckner, 2000).

One major trend of our century is the increase of the proportion of people living in towns and cities, which in one word is called urbanization (Cities, 1997). It is expected that by 2050 nearly 70% of the world's population will live in cities (Zhao, 2010). Urbanization is no longer typical for the growth of cities or towns only, but it influences the processes in the rural countryside as well (Antrop, 2004). The major reason that a city expands is the increase its inhabitants. Depending on each case, one can observe a city expanding either through its density –most of the times vertically- or through its spatial expansion. Obviously enough, the density of a city can increase until a limit, when this limit is exceeded, then urban spatial expansion occurs. Of course the urban grid is not expanded only when the density reaches a

limit, but for other reasons too which are analyzed below. Eventually, when the second type of expansion occurs –the spatial expansion- the urban grid takes over the surrounding farming land. What we do not realize yet, is that the land we sacrifice in order to develop our urban civilization, is the same land that -at its previous form- is providing the necessary goods for our cities.

In addition, rising household incomes can affect urban growth too. Over the next three to four decades, global per capita income is projected to rise at a rate of over 2% per annum, beginning with developing countries that are starting from a low base expected to rise at even higher rates (Du et al., 2004). As a result, the residents of a city demand more and more living space as they become richer over time. This effect is reinforced by the residents' desire to carry out their greater housing consumption in a location where housing is more affordable, namely the suburbs (Brueckner, 2000). But becoming richer in this case does not only mean buying a house at the suburbs, it also means having the economic capability to own more than one house inside the urban grid and even constructing secondary houses for vacation. Moreover, researches shows that nowadays people tend to desire more developing one-person households and it is very likely to continue in the same pattern for the next several decades (Pitkin and Myers, 2008).

Last but not least, a similar phenomenon occurs in regard with the investment in freeways and the rest transportation infrastructure. Because such investments makes travelling faster and more convenient, the consumers can enjoy cheap housing in the suburbs without worrying for the extra distance that they have to cover, nor for the extra time they have to spend travelling (Brueckner, 2000). Consequently, suburban locations seem more attractive as the transportation system upgrades, a fact that spurs suburbanization and leads to the expansion of the city out of its limits.

Therefore, one can find several reasons to explain why the cities are expanding. However, this phenomenon creates various issues in regard to the amount of land that the city takes over from other land uses –such as the farming land-. This paper will deepen in the case of the agriculture land, which is being reduced in order to provide space for urban development. A common situation is that the land owners who surround the city grid are forced to provide their land for urban development. Eventually, these farmers have to adapt to the new predicament and continue their business either at a different location or with a different approach than before.

However, the issue that occurs has to deal with the production of agriculture goods as well. These goods are needed to supply the city -or another area through exporting- with food and clothing. But as the available farming space has start to shrink, the supplied amount of goods will be hard to cover the demands. Therefore, the farmers will be unable to feed the cities and the rest of the world. While a number of developing countries even now suffer from acute food shortages and malnutrition (Sasson, 1990) one can say that this is not a problem we need to face in the future, but rather an issue that is already obvious at several parts of our world, showing us from now the consequences of neglecting it.

Regarding the food supply and demand issues mentioned above, it is essential to point out that globally the food demand is steadily rising (Kearney, 2010) due to various drivers. The major reason is that the population of the earth is rapidly increasing and in the next forty years the population is expected to increase by 35% (Ezeh, Bongaarts and Mberu, 2012). In other words, our cities are expected to host additional more than two billion residents by 2050 (Ezeh, Bongaarts and Mberu, 2012). Moreover, as explained above the average income is increasing and it affects the consumer's behavior towards more consumption. As Brueckner claims that western countries with richer citizens consume larger amounts of food daily. However, the issue with wealthy societies is not only the actual consumption, but also the amount of food that is being wasted (Brueckner, 2000). It is true that day by day, people change their consumption behavior and they tend to waste more and more food, claiming that it is not fresh or even not tasty enough. Several studies indicate that the food wastage fluctuates at about 25% of the national available amount of food (Schneider, 2008). Finally, retail and trade liberalization are also play a role in the increment of the agriculture products demand (Kearney, 2010). Nowadays, all farming products can reach every corner of the globe in a relatively low travelling cost and a rather decent amount of time –while keeping their freshness-, comparing to the past. Therefore, having an unlimited amount of options can lead to even greater consumption, without even counting the extra wastage during the trading process (Schneider, 2008).

Summing up all of the above facts, one can conclude into one major problem. On the one hand, the cities are forced to expand from several reasons and eventually they take over the available farming land. And on the other hand, the demand for agriculture products is constantly increasing as the global population keeps rising. Therefore, the issue that comes out of this statement, indicates that the farmers must reach the increasing demands in production with a decreasing amount of land in their service.

1.2. Research objective

The outcome of this situation is that farmers are seeking for solutions in order to improve their productivity or to find new unexploited pieces of land that are capable for agriculture purposes, at least for maintaining their production at the same level. Apparently, they have to comply with the policies and regulations that exist for the land uses in their area. Because when a city expands, all the surrounding land uses are affected, like nature areas or touristic areas etc. Eventually, all the affected areas will pursue to recover the lost ground. However, expanding over farming land tends to be more common since it is supposed to cause the least collateral damage and as mentioned above it is the land type that covers most of our environment (World Statistics, 2016).

Therefore the objective of this research will focus on the farmers' behavior and reaction to the changes that occur in their field. **This research will aim to explore the actions that a farmer take when urban expansion takes over a part of his farming land and it will emphasize on understanding the reasoning that drives him towards these actions. Additionally, the research will investigate which variables drive farmers to their actions and what are the impacts on farming productivity.**

In order to clarify the research objective, a general research question is formulated and specific research questions are following, to focus and make clear all the different components of the topic:

1.2.1. General research questions

- **How do farmers react at an upcoming urban expansion towards their land?**

1.2.2. Specific research questions

- What are the possible options for a farmer to follow when a part of his land will be lost owing to urban expansion?
- What are the reasons that lead the farmers to these options?
- Which factors can affect the farmers' decisions?
- What are the consequences of each option for a farmer after a change like this?
- How can these reactions affect the productivity of a farmer?

1.3. Relevance

At the end of this study several outcomes are expected, in the form of either primary data or in the form of theories and guidelines for future usage. In both case scenario, these outcomes are intended to be used from both the social and the scientific community.

To begin with, the results that will be delivered can be used as guidelines by the farmers that might face a similar situation as described with their agricultural land. Therefore, the knowledge that will be generated can assist them choose the most appropriate solution for their case, knowing the consequences of their possible reaction.

Moreover, this research can contribute to the scientific community too. The planners and the policy makers can use the collected information in order to foresee the possible reactions of a farmer and his future behavior. Finally, the data and the results of the research will be available for academic usage in any relevant field.

1.4. Research type

This study has an explanatory form, because the goal is to investigate the reactions and the reasoning of the farmers (Kumar, 2011) in response to urban expansion. The issues that this paper deals with, are real case phenomena that occur in Greece. Therefore, the appropriate way to investigate this situation is by selecting different areas and realizing separate case studies.

1.5. Outline of the structure

After this brief introduction to the topic, the chapters that will follow will deepen into the root of the issue that was mentioned above. To begin with, in the next chapter all the relative theories and concepts to this issue were gathered and analyzed, in order to create a framework to guide the research. Through the theoretical framework a conceptual model is created to illustrate the relations between each element of the research objective. Moreover, in the same chapter the analytical framework follows, to provide instructions on how to verge the research as well with the expected results.

The next part of this paper discusses the methodology of the research. It analyses the instruments and the research methods that were used during the data collection process and it ends with the limitations and the validity of the project. Later on, the results of the interviews

are presented on the respective chapter along with the results of the analysis. The results are provided in the form of text and visualized in graphs to have a clearer perspective.

The final part of this paper is consisted of a discussion about the results and the outcomes of the research. Of course a brief conclusion follows in the end, which summarizes all the findings and descants about the future of farming in response to urban development.

2. Theoretical Framework

As it is already stated above, the issue that this report is dealing with, is the farming land that is decreasing, while in the same time the demands for agriculture products are steadily rising. However, the availability and the amount of land is not the only factor that affects the production of agricultural goods. Several indicators can affect –either in small or larger scale- productivity in farming. Van der Werf and Petit (2002) claimed that in order to reach the desirable outputs –products- it is needed to optimally combine inputs, based on the natural capital and the human-made capital. The natural capital includes indicators such as solar energy, the rainfall amount, the availability of land, the initial quality of the soil etc. On the other hand, the human-made capital is consisted of the products that we –humans- have created in order to farm. For example the fertilizers and the pharmaceutical products that we place into the ground, the plant seeds we modify in order to increase our production, the human labor, and the available technology we use to grow our crops etc. Apparently, the level of production is highly depended on both of the capitals (Van der Werf and Petit, 2002).

However, for this case the factors that affect productivity will be categorized and analyzed even more in depth in order to understand how the reduction of the land influences the final outcome and how it can be outbalanced. An illustrated representation is provided below, in order to simplify the concepts and the factors that will be mentioned (see Figure 1). To begin with, the framework presents the linear process between the demand for agriculture products, the farmers and the final production. The green colored box represents the demand for farming products and the color indicates the increment over time. The demand for agriculture goods is directed toward the farmers, who are responsible for the production. As natural, a phenomenon like this adds pressure on the farmers to achieve each specific goal of the demands. However, the productivity of a farmer does not depend only on him, but also on several variables. Obviously, the main topic of this paper is also the first indicator that can affect productivity and it is the availability of the agricultural land which is actually shrinking (Buringh, 1989). Below, at the theoretical framework graph (see Figure 1) the availability of the land is represented with red color, which indicates the reduction. Moreover, the weather conditions are outmost of importance but also the only factor that cannot be directly manipulated, a fact that justifies the grey color of the box. Continuing with the rest of the indicators, the next three are highly depended on each individual farmer and the farming practices that he follows. First of all, the amount of labor that a farmer invests can vary and eventually affect the firstly the quantity and secondly the quality of goods that are produced (Feder, 1985). Another major factor is the amount of the recourses that a farmer uses and

chooses to invest at his farm –which is also related to his farming practices- (Heichel, 1976). The resources can vary from the quality and quantity of the fertilizers, the pharmaceuticals and the seeds that are used, to the amount of irrigating water and the energy that a farmer is willing to invest, in order to reach a desirable production. Last but not least, surveys has shown that farms tend to be more productive when innovative technology is being used (Lockheed 1980), a fact that eventually makes education and technology inseparably parts of agriculture. Therefore, the last indicator that can affect productivity is the relation of the farmer with the relative technology.

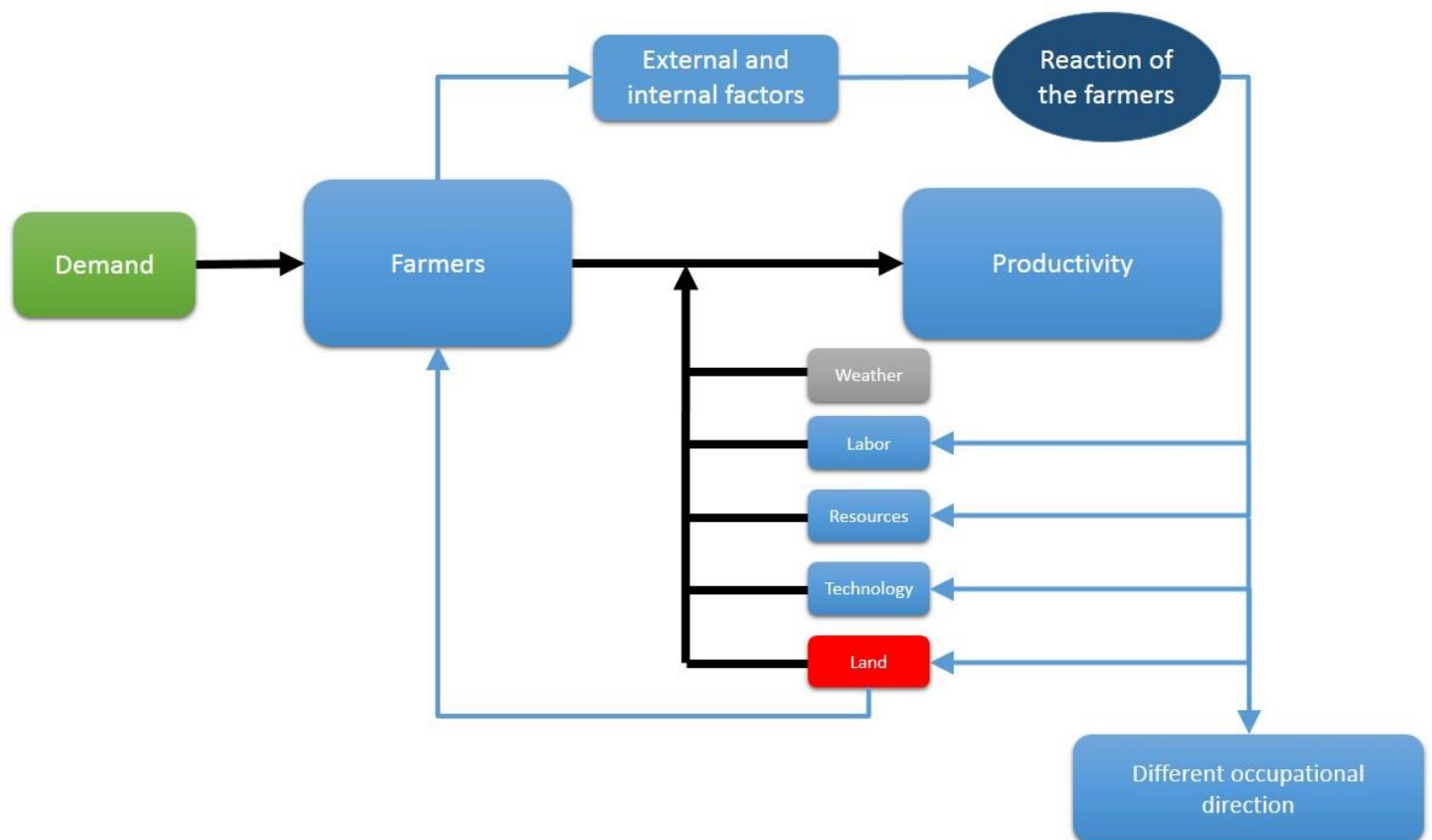


Figure 1. Theoretical framework. The linear process of productivity and the indicators that affect it.

Summing up all these indicators, one can realize that productivity can be affected by several means and whenever one of these indicators is altered, productivity is expected to vary also. Therefore, the farmers are pressured to reach the demands and eventually they react to the reduction of the land –with various responses in each occasion- in order to keep the productivity at the same level. Of course, their reaction is depended on external and internal factors which are different for each individual. Regarding the external factors, each factor that is not related to farming and agriculture it is considered as external, such as the age of the farmers, their family conditions, their place of residence, their occupational status or even

their personal experiences in life so far. Moreover, it is necessary to mention that the internal factors can be as important as the external. These kind of factors include every relevant factor with farming, such as the type of farming and the scale of a farm, or even the compensation amount that each farmer receives. However, as visualized at the theoretical framework above (see Figure 1), the reaction of a farmer can affect the initial indicators, which are highly connected with the production. Finally, there is always the possibility and the option for a farmer to choose a different occupational direction than agriculture after the urban expansion, since it is not so simple to overcome the difficulties of land loss and new opportunities might occur on the way. However, this example shows us, that among with the available farming land that is decreasing also the population of the farmers might decrease.

Moreover, since the urban grid is expected to expand, it is possible for many farmers to seek for new working opportunities within the urban environment, such as developing urban farming activities or cooperate directly with local markets² in order to counter-balance their economic loss. Another option to avoid a possible financial loss, is to modify the density of the farms. An intensive type of farming implies that the initial investment is multiplied comparing to the extensive type, for the same amount of land (Haas, 2001) and the same applies for the final profit. The result in this case is that with less land the profits of the farmer can be maintained at the same level. However as Haas stated, in a long-term scenario, where the intensive type of farming will claim land from the extensive type, each farming product is expected to have its price modified (Haas, 2001). This can be a phenomenon that will agitate the current economical balance. Moreover a concept that is becoming more and more popular nowadays is vertical farming, it can combine urban farming and intensive farming too. However, it is still a concept in a developing phase which might not always be feasible due to its high costs of constructing and maintaining (Banerjee, 2014). Eventually, all these hypothetical reactions can indicate changes at the amount of labor, the amount of resources and the technology that the farmers already used. In general, the farmers will try to find or create a way to maintain their profit at the same level and by any mean that seem suitable for them.

Lastly, there is always the probability that that the farmers will show no reaction to these changes and they will continue working with their reduced amount of land. This option can also be justified, since most of the land is already occupied by various land-uses and finding available and appropriate land is not an easy thing to do. Therefore, an upcoming situation

² Cooperation directly with the market: Out of personal experience, farmers have stated many times that one of their great desire is to overpass the mediator between them and the consumer. It is a belief that the mediators are responsible for the high prices of their products and setting them aside will benefit both the consumer and them.

could be the increase value of the remaining agriculture fields. But on the other hand, the farmers that lose their land in Greece always receive compensations (Kassioumis, 2004) which they can invest for their own interests. From my personal experience so far with farmers, there is a significant amount of them who have several economical debts, but they still prefer to postpone the payment and instead try to invest more on their farms.

Concluding, it is becoming very clear that the decrease of farming land can effect on various layers the whole agriculture sector. Therefore this study will investigate how the reduction of the land will affect the factors that influence the production.

2.1. Analytical Framework

This research will focus mainly on the farmers' behavior and the expected outcome will be an attempt to understand and analyze their reactions in contrast to urban development and expansion. To achieve that, all the concepts and theories that are mentioned above are summarized at the analytical framework below (see Figure 2). At this part of the research it is significant to identify any relative correlation between the farmer, their reaction, their reasoning and the consequences that might occur.

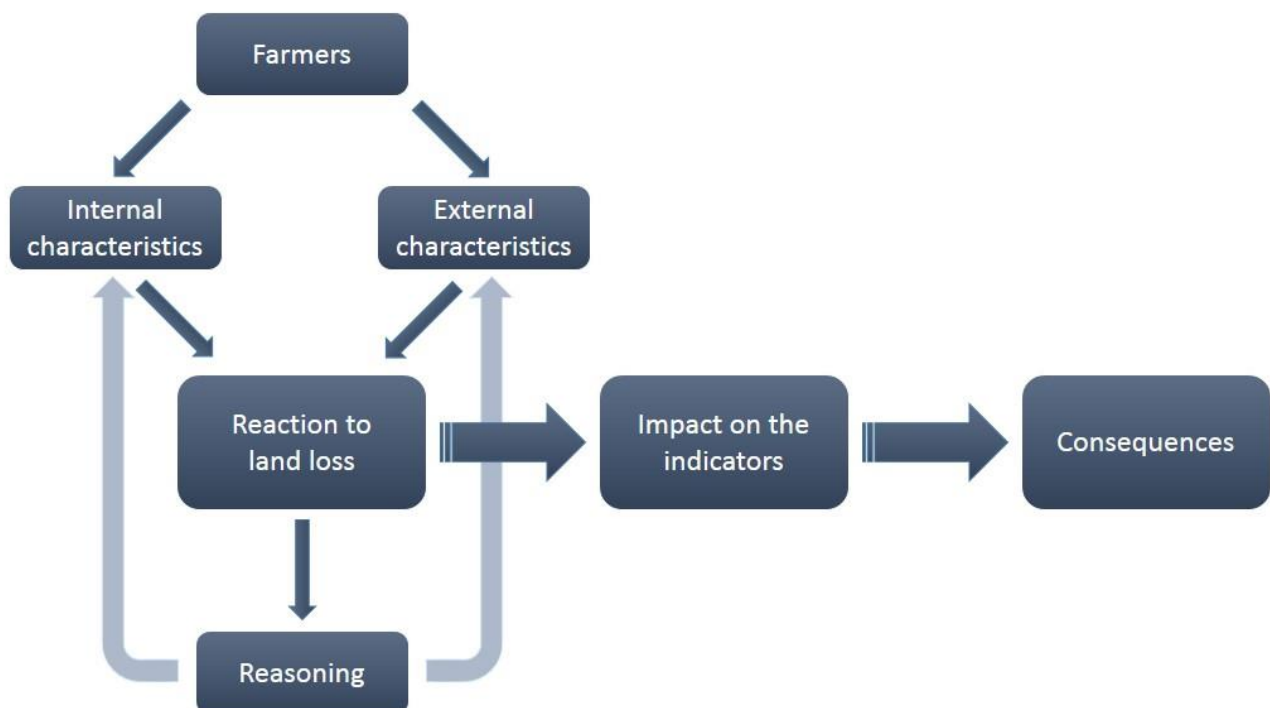


Figure 2. Analytical framework: the factors that affect the reaction of a farmer and its consequences.

In the attempt to focus on the farmers' point of view, it is important not only to treat them and characterize them by their profession, but also as humans with their own experiences in life and their unique way of thinking. Therefore, as shown at the analytical figure above (see Figure 2), before detecting their reaction or possible reaction to land loss, general information needs to be collected regarding their personal life that might affect their decisions. The information that is searched is all the possible data that might relate to their reaction. This general statistics consist the external characteristics that can affect the research. Obviously enough, the data that is necessary must extend also to the specific characteristics of each farmer, regarding his farm and his farming practices, in other words his internal characteristics.

However, the most meaningful step of this research is to investigate the actual reactions and even more significant to understand the reasoning behind each reaction. In order to understand the reasoning, the goal of the researcher is to identify the correlation between the reactions and the characteristics of each farmer, external and internal. To find out all the aspects of the farmer's life that might affect his decision. For example how can the age or the family condition play a role to the farmer's decision? Or to examine if there is any relation between different types of farming with the final decisions of the farmers. These correlations will be extracted from the following elements; the age of the farmer, his family condition, the location of the farm, the type of farming, the extent of the farm and his occupational status.

Finally, when aiming to deepen even more at the reaction of the farmer, it is clear that the reactions could have an impact on the indicators that influence the productivity of a farm (see Figure 1). The impact could both be positive or negative, depending on the reaction. This research will examine the correlations between the reactions of the farmers and the labor, the technology used and the resources that are invested. For example it will be investigated when a farmer will try to replenish his land with new, if he will eventually need to work and invest more than what he used to. Finally, it should be examined how the ownership can affect the farmers' decision. Therefore, one of the final outcomes of this research is to visualize all the possible consequences that can occur, primarily to the farming society and secondary to the rest of the society.

2.2. Expected results

At this point of the paper it is important to mention once again that in the past I had gained plenty experiences by living and working with farmers. A part of the job was maybe not to think like them, but at least understand their way of thinking. Therefore, it is very possible the expected results to be very close to the reality.

To begin with, the first expectation has to deal with the side of the government and their interest on this issue. It is very possible to face a disinterest on the topic since the construction of an urban project seems to be far more important than disturbing a few farmers' daily routine. Moreover, it is expected that the responsible planners for these kind of projects will express the same opinion about how should a farmer react, meaning searching for new land with the compensation money. However, there is doubt if they consider how possible and effortless this can be. Finally, testing their general awareness about the reduction of the overall land and the productivity will be an interesting point, but from my personal point of view the regional planners might not consider this issue, although it could be considered by the national planners.

Proceeding to the main part of the research, the farming society, it is likely to meet mostly middle age farmers that grow crops extensively and they settle somewhere close to their farms. About a 30% probably will have experience land loss and a significant smaller amount might state that the land loss had affect their income. Regarding the awareness to this issue, it is expected that most of the farmers if not all are aware of the problem but maybe not really prepared for when it will occur. This fact can be assumed by the behavior of the farmers that is rather individualistic. From personal experience I observed that the farmers would not react as a mass when a situation affects only individuals.

As far as their reactions towards the land loss, the overwhelming majority is expected to seek for new available land and try to continue their business as before. However, during my interaction with the farmers, I gained the perception that there is a sense of dissatisfaction among the farmers with present situation to their profession. The unstable profit and the difficulty of their occupation (Makeham and Malcolm, 1993) might lead several farmers into other solutions than looking for new land. In conversations with farmers many times is heard that they want to quit, but it is not definite how certain are they for this option, however it is definitely expected to be heard in this research. The reasoning to this answer will probably be the economic aspect but also personal reasons that can affect every individual.

In regard to the consequences of the farmers' reactions, the farmers that will choose to replenish their land, it is possible to claim that they will be affected regarding their amount of labor and the initial resources they used in the field. As for the rest, it is rather logical to say that their decision to quit farming –even partly- will contain a risk and their future might be unknown. Therefore from these participants it is expected to receive various answers that might have no relation to one another.

Finally, the last expectation has to do with the current economic crisis in the country.

Knowing that most of the construction projects have stopped due to lack of funding and it is rare in this time to see new projects beginning, it is expected that this period land loss is a less common incident than a few years ago. So, it is awaited to meet farmers that experienced land loss before the crisis began, rather than the period of the last eight years.

3. Methodology

This study has been an explanatory research, because the goal was to investigate the reactions and the reasoning (Kumar, 2011) of the farmers in response to urban expansion. The issues that this paper has dealt with were real case phenomena that occur in Greece. Therefore, the appropriate way to investigate this situation was by selecting different areas and realizing two separate case studies. Since the main focus of the research was the farmers and their reactions, it was decided to select farmers from different locations with different characteristics, which are described below.

3.1. Data collection

The first step of the research was to clarify what kind of data was requested, in order to answer the research questions, to fulfill the research objective and finally conclude on how to obtain the data that is required. To begin with, it was important to collect data about the policies and regulations regarding the ownership of the land and how strong is the binding of owning a property. Moreover, information was needed about the compensations that are provided from the government when the land is possessed –regarding both the procedure and the amount-. Also, it was fascinating finding out how much aware are the planners in regard to the problems that they create to the farmers and of course if they are aware of the reaction of the farmers and how they deal with this issue –if they do-. Finally, it should be researched if there are any other privileges other than these that were taken into account, for the individuals that lost part of their land.

This kind of data, initially was intended to be gathered from secondary sources, since it could be collected through literature research on policy documents and articles from the region's planning department. However, with my arrival at the planning department, it became clear that a conversation with one of the spatial planners would be more convenient and definitely more efficient than directing myself to the relevant documents. Also, this was the only way to acquire the awareness and the interest of a planner to this issue. Moreover, the opportunity was given to gather the knowledge and experiences of an expert at his own field, by listening to his opinion from the point of view of a non-farmer. Later on, when it was decided that the collected data was satisfyingly enough, it was obvious that the policy document review was not needed after all. The interview with the planner was conducted at the department of regional spatial planning in the city of Thessaloniki. However, the collected data was not referring only to the homonymous region, but to a national scale, including the majority of the regions of the country.

Furthermore, the most significant part of the research was intended to be the primary data obtained from the farmers. Semi-structured interviews were planned to take place in order to investigate their reactions in response to urban expansion and their way of thinking. The instrument that was selected for this procedure was the semi-structured interview, because it could provide in-depth information, but also it would allow –me as an interviewer- to have flexibility at the questions asked and adjust them in case of receiving unexpected replies that needed further explanation. The content of the semi structured interview can be found at the annex chapter (see Annex 1). In a brief summary of the structure, the interview focused on some personal information of each farmer and some information about his farming practices and characteristics. Moreover, emphasis was given at the part of land loss and their – probable- reaction. Finally, the last parts of the interview were referring to the possible consequences of each farmer actions.

The examined population was consisted by professional farmers who possess or rent their land for agriculture purposes. Farmers who had extra occupations were also included, as long as they were considered as active³ and they were producing any kind of agriculture products. A desirable characteristic of the population was for each individual to have already lost an amount of land due to urban expansion. However, this condition was not necessary, because the interview could be realized on a hypothetical level too. The selection of the interviewees was made randomly for each case area. Unfortunately, not all the selected persons replied to the call, therefore when an incident like this occurred, another participant was randomly selected. The selection was made at the Excel Office sheets by the Randbetween⁴ function. All the names were already listed numerically and the algorithm of Excel was providing each time a random number to select.

Regarding the size of the sample it was decided that a random selection of thirty individuals would be a decent amount for this kind of a research. The selection as mentioned above was random out of a data base of 975 individuals in order to avoid systematic biases in the sample. The data base that was used, had been created out of my personal work due to my previous job responsibilities at an agriculture company that spreads at all regions of Greece. One of the tasks that the company imposed, was to create and expand a network of active farmers that

³ Active/inactive farmers: A common phenomenon in Greece is to meet farmers that might officially state that they produce agriculture products, but in reality they do not. There is a share of people that try to take advantage of the provided subsidies. These kind of farmers are not suitable for the research since their fields are not productive at all or they get a minimum production that might not even be collected.

⁴ Randbetween. This function of Excel provides to the user a random integer number between the numbers you specify. A new random integer number is returned every time the worksheet is calculated (Support.office.com, 2017).

are residents in three neighbor prefectures. Conveniently, two out of three of the prefectures were chosen in order to have a representative sample of an urban and a more rural area. The list of the farmers in the data base covers the approximately the 22% of the whole farming population in these two regions.

3.1.1. The two case areas

As for the location of the sample, two prefectures were chosen for this study in advance. Both of them are located to the north part of Greece and are part of the same region, but they differ significantly at their geomorphological and economical characteristics and their development so far. The region is named Central Macedonia of Greece and it is consisted out of seven prefectures. The purpose of the selection that was made, was to have two diverse cases that will provide a wide variety of farmers with different characteristics. Furthermore, it is assumed that the results of the research will show disparity at the replies of the farmers in regard with their place of business.

The first prefecture is called Thessaloniki prefecture and it includes the homonymous city that



Figure 3. Location of Thessaloniki prefecture (De.wikipedia.org., 2017).

is the second largest city of Greece in extent and population –a rather urban area- (see Figure 3). More than one million residents settle in the area, with a density rate of 287,2 person/km² (Statistics.gr, 2017). Obviously enough, this great amount of people create the need for a dense environment with many urban elements –such as industrial areas, developed transportation infrastructures, shopping malls and various working living areas- both inside

and outside the urban grid. Thessaloniki prefecture hosts about 18.398 people who are occupied partly or entirely from farming (Statistics.gr, 2017).

The second prefecture is the named Kilkis, it is bordering with Thessaloniki and it contains a homonymous capital too. A

general characterization is that this prefecture can be described as more rural than Thessaloniki. The population is less than 90.000 residents with a density rate of 35,35 person person/km² (Statistics.gr, 2017). However, the differences at farming are not so significant comparing to the other sectors. This phenomenon occurs, because the major occupation and source of profit of the



Figure 4. Location of Kilkis prefecture (De.wikipedia.org., 2017)

prefecture is farming. Even if the population is more than ten times smaller than Thessaloniki's, the farming population is more than half from the bordering prefecture - 10.587 farmers- (Statistics.gr, 2017).

Out of these two regions, thirty farmers were selected for the interviews, fifteen for each case study.

3.1.2. Obstacles and difficulties during fieldwork

In general the whole procedure of the data collection had a smooth progress and only few obstacles appeared among the way, but eventually they were overpassed. The first issue that came through had to do with the weather conditions. With my arrival to the research field, to my surprise the weather had improved drastically from the previous days, as a result the farmers were constantly busy and unreachable –it was the sowing season for wheat products-. However, at the end of the second week the rainfall worked for my benefit. Another, issue that has been intense was the fact that the farmers were affected from my previous occupation and the relationship we had before and several times they were trying to change the topic of the conversation towards our previous discussed topics. As a result some interviews took longer than expected and eventually affected the coding part, since everything they said was recorded. Last but not least, probable the most significant issue that appeared during the interviews was the misunderstanding of a specific question. When questioning how they would react if they would lose farming land due to urban expansion, many of the participants

believed that they were asked about their mental behavior. Eventually, they were delivering answers such as getting sad or anxious, so several times it was necessary to rephrase the question and even give examples of other people's reaction to make them understand. The unfortunate of this situation is that giving answering examples to the interviewee could have generated bias replies.

3.2. Data analysis

Subsequently, when the desired amount of data was collected, the coding part began in order to proceed to the analysis. The form of the raw data initially was in audio records and each interview lasted approximately from thirty minutes to one hour. Therefore, it was very important to code it in a manner that no unnecessary work would be done since the raw material was of a great amount. The initial idea was to transfer the data to ATLAS.ti as it is commonly done in similar cases. However, the fact that the spoken language of the audio records was Greek, prevented me from doing so. The fact that Greek is a tonal language and it has a great variety in words, idioms and expressions, it could affect the results of the research. Therefore, the most appropriate way to code the data was to create my own coding system which would include all the possible words and expressions that ATLAS.ti could not recognize as one.

Regarding the coding system, it had the same structure as the interviews, in order to categorize each question. The tool that was used was the Excel Office sheets, which was suitable for organizing each interview and each question into plain and unambiguous categories. The procedure was rather simple, each interview was analyzed separately and the main focus was always on the meaning of every response and not on the wording. Eventually, it was noticeable that the interviewees had replied with various responses in some questions but with similar responses in other questions. The responses which had the same or almost an identical meaning were considered as the same response.

The next step of the research was to extract the first results, meaning the most popular responses or several average statistics. For example it was very handful to create an image of the average farmer that participated to the research, with all the gathered characteristics from the research such as his age, his occupational status, his family conditions, the extend of the farm etc. Moreover, at the most critical question of how would a farmer react at a land loss situation, the most popular response made things clear regarding the intensions of the majority of the farmers. However, what was most intriguing at this point, is to correlate several responses from different questions together. To correlate several variables the analytical framework (Figure 2) was used as a guideline in order to generate meaningful

outcomes and useful theories. These theories could assist into realizing the way of thinking and reasoning for each farmer.

3.3. Limitations and validity

This research aimed to focus on qualitative data because it was necessary to have in-depth discussions with the farmers, in order to fully understand their intentions and their needs. A quantitative research would not be appropriate for this case, since it was not feasible to have a numerous sample size for interviews that is requested for this kind of research. For validity and credibility reasons the chosen sample size was as large as possible -thirty interviews- and more than one case study was examined. Also, reliability was achieved through crosschecking the information from the planners at the planning department with the interviews from the farmers.

However, having a contained amount of interviews for a single research does not ensure that the results will be absolute accurate and will represent the exact truth. It is necessary to take into account that the sample size investigates a very small part of the population and is very likely to neglect some situations that did not appear at the fieldwork. Furthermore, this study examined individuals from all the age groups and with various farming activities and unique characteristics, so there was no intention to have any kind of focus group, but the random selection of the farmers might provide more individuals from specific group. It is not possible to know if the representativity of the sample is accurate and if the studied population was examined equally (Kumar, 2011). Another interesting fact that might affect the research is that economic crisis factor. As it is already mentioned the crisis in Greece began at the years 2008-2009 and it still exists ever since (Madianos et al., 2014). However, what is not taken into account in this research is that the development and therefore the urban development has been reduced drastically. This phenomenon can affect the research and its findings because the results will apply mostly at the period before and at the period after the crisis. Last but not least, a fact that is resulted out of personal experience is that the farmers do not always provide accurate information for their own personal reasons. For example, the people who had already received a compensation amount for land loss, most of the times hesitated answering the question how they used this amount. Also from my working experience it is already known that there are several cases of farmers who declare a fake size of farming area for economic reasons. Therefore, the outcomes might differ slightly from the reality.

4. Results

Having the data collection stage completed, the first part of this chapter will present the raw data from the interviews at the fieldwork and the second part will provide several correlations between the examined variables. The findings are demonstrated objectively and graphically through charts and text below.

4.1. Results of the interviews

The first interview accomplished was an introduction to the field, the planner who was the interviewee could provide general information about the scientific problem of this paper. However, the farmers' interviews were more extended and elaborated because they were focused on the research objective. At the two chapters below all the findings from the interviews are presented.

4.1.1. Findings from the interview at the planning department

To begin with, the first interview was accomplished at the spatial planning department of Thessaloniki. The interviewee was an architect with specialization on landscape architecture and planning. The general discussion was referring to the procedure of any construction project that takes place within areas being used for farming purposes. Moreover, the interview was directed towards the planner and his consideration to the farmers' needs and the consequences they face after the project's implementation. Finally, the discussion ended with some questions about the compensation money the farmers receive. The aim of this interview was to guide the research and provide the basic information about topic from a professional point of view. But also, to find out the consideration that the planners show to the issues they create to the farmers.

First of all, it was made clear that the urban development and expansion is not always the result of public bodies' actions but of private also. Occasionally, both the public and the private sector are on a synergy to realize large scale projects that might expand the urban grid drastically. Projects such as national roads, shopping malls, expansion of the residential areas, theme parks, airports etc. As an appropriate example, the architect pointed out Mediterranean Cosmos. A shopping mall located in the east side of Thessaloniki at 2005, which claims to be the largest retail and entertainment development in Southeastern Europe. Ever since, the landscape was modified and multiple urban projects took place in the area, eventually

expanding the peri urban zone. The initial project was developed by private companies in cooperation with the spatial planning department of Thessaloniki. However, the rest of the urban development projects were generated by private initiatives that wanted to take advantage of the strategic location. The main difference in this situation between the private and public bodies was that the construction of the mall was an inevitable situation for the farmers and their future was under the hands of the planners from the public sector. Eventually, they received the compensations with the least possible controversy and the project proceeded. On the other hand, the rest of the surrounding projects were much different. Many small companies bought the land to profit from the great amount of people that would gather daily. This time the farmers had the situation under their control and they could negotiate about the value of the land –probably they overpriced their land- and even reject any kind of possible offer. It is essential to realize that the procedure of the development differs when private initiatives are involved. While the constructing regulations when developing an urban project are not very strict, it makes it hard to control and monitor the city expansion.

Therefore, the planners seem to be concerned for the farming needs of an area on the projects they undertake, but until a limit only. This phenomenon occurs because the public bodies argue that the projects they undertake have to do more with public services and with improving the quality of life of the citizens, rather than the profit of a single individual. So when they undertake a specific project, they set several priorities on what kind of farming land should they take over. Apparently, the costs is the main reason for this distinction, not only because the public companies will have to pay more to the farmers for certain type of land, but also because the farmers will struggle recovering towards their previous working and economical level. The preferences for taking over farming land are firstly the grazing and fallow land, secondly the extensive type of farming land, then the intensive type and lastly the animal farms that usually include built constructions. More or less the same situation exists for the private companies that try to buy land, with the only difference existing, is that the landowners can negotiate as hard as they desire and even reject any possible offer. However, when it comes to individual initiatives, most of the farmers don't realize that the available farming land is shrinking and eventually it will not be enough to fulfill ours and theirs needs. As the architect from the planning department said “it is easy for everyone to watch out for his tree, but what happens with our forest?”.

The architect continued claiming that the public sector often offers support and opportunities for the people that have lost their land but not always this help is endorsed by the farmers. When he was asked about the reaction of the farmers and their next move after the land loss,

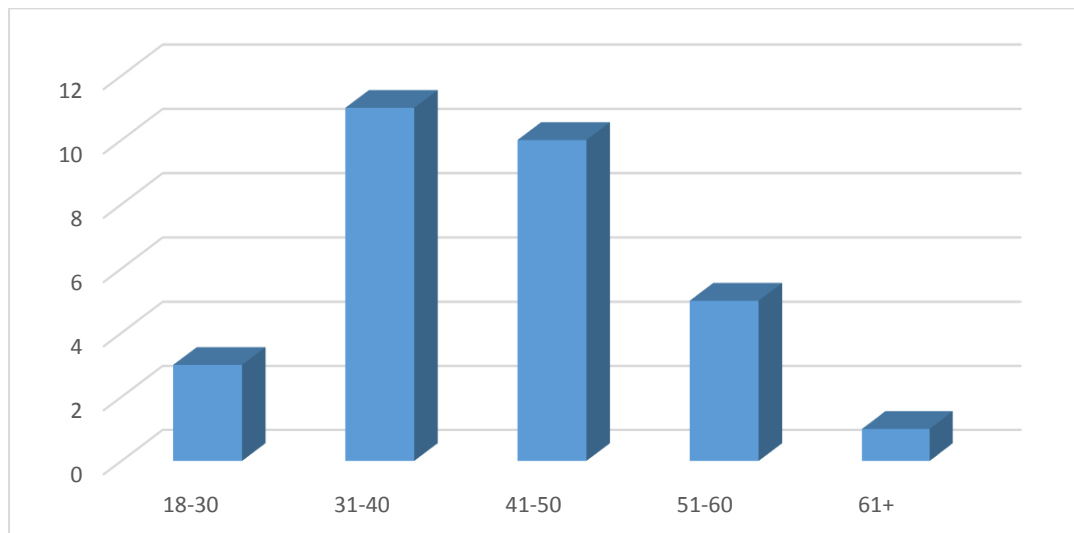
his reply was that about 90% of the farmers seek for new land to depute their loss and the rest see it as an opportunity to start with something new and different. Moreover, when a large scale project is being designed, the planners try to find alternatives for the landowners at the surrounding land by creating new farming land or by changing the land uses at certain places when possible. However, as the architect pointed, the only land use that is steadily increasing is the urban and residential areas since the economic profit is driving towards that direction, which eventually will devour the rest types of the land. Concluding to the statement that it is essential to put stable limits to urban expansion that will not be overtaken on the first opportunity.

4.1.2. Findings from the farmers' interviews

As planned from the methodology part of the research, thirty interviews with random selected farmers were carried out. Half of them took place at the prefecture of Thessaloniki, close to the second largest city of Greece where the urban environment is dominating. The rest of the interviews were accomplished at the prefecture of Kilkis and as mentioned above this prefecture is rather rural and it relies mostly on agriculture activities to sustain and develop.

General characteristics of each participant.

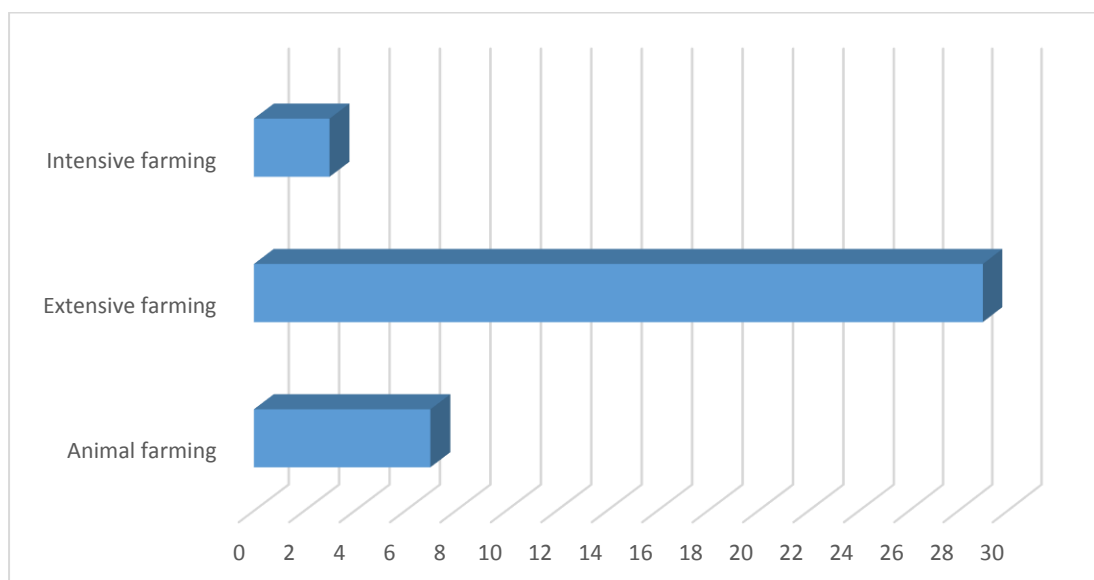
At the beginning of each interview, apart from the introduction to the research, several general characteristics for each farmer were collected. Characteristics such as their age, their place of residence and their family conditions. Therefore, the average farmer from the selected sample was a 42,8 years old male who is married with children. However, it was very interesting to notice that the fluctuation of the age chart was focusing at the age group of 31-50 (see Graph 1).



Graph 1. Age of the farmers

Moreover, not a single candidate that was interviewed, was younger than twenty-seven years old or older than sixty-three.

The interview then advanced to the general questions regarding their farming land (see Graph 2). All of the interviewees except one, possess extensive farming land with seven of them having animal farms too and only three of them having intensive type of farm land.

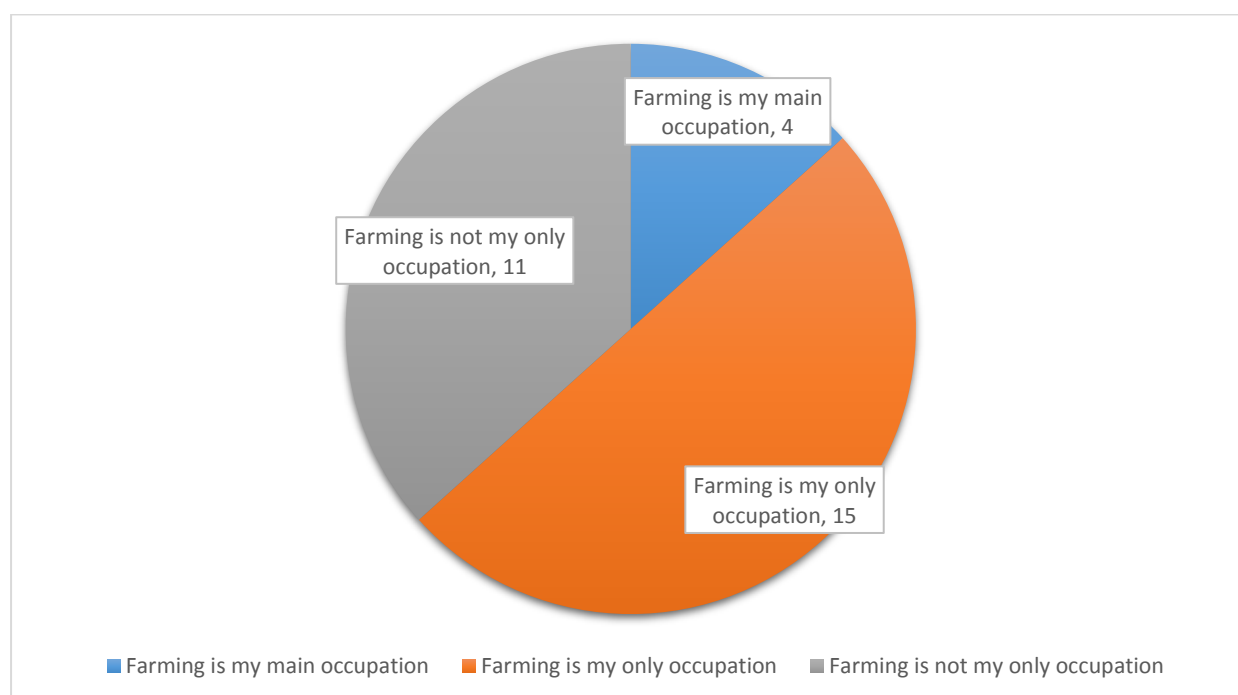


Graph 2. Type of farming

This ratio can be justified through the selection of the two locations that are specialized at crop farming. At different parts of Greece the ratio between the farming types varies. Some areas produce mostly fruits and vegetables and other areas focus on crops. The next point of

the discussion was about the average distance from their farming land to the nearest urban area. It is true that the farmers in Greece possess several farming plots of various extents and locations. Therefore, some of the farmers hesitated to answer this question and replied approximately. The average distance of a farm to an urban area was 5.8km and the values fluctuated from zero to fifteen kilometers. Furthermore, the farmers were questioned about the extent of their land. Obviously, having a large farm –in size- and very close to an urban area, collects more odds at losing your land due to urban development. The average size –in extent- of the farming business of each individual was about 580 acres with the fluctuation to begin at 30 acres and reaching 1200 acres. In this question the majority of the farmers were rounding up the number for the convenient of the research.

Finally, the last part of the general information was about their occupational state. It is very common for a farmer to have a second source of income.



Graph 3. Occupational status of the farmers

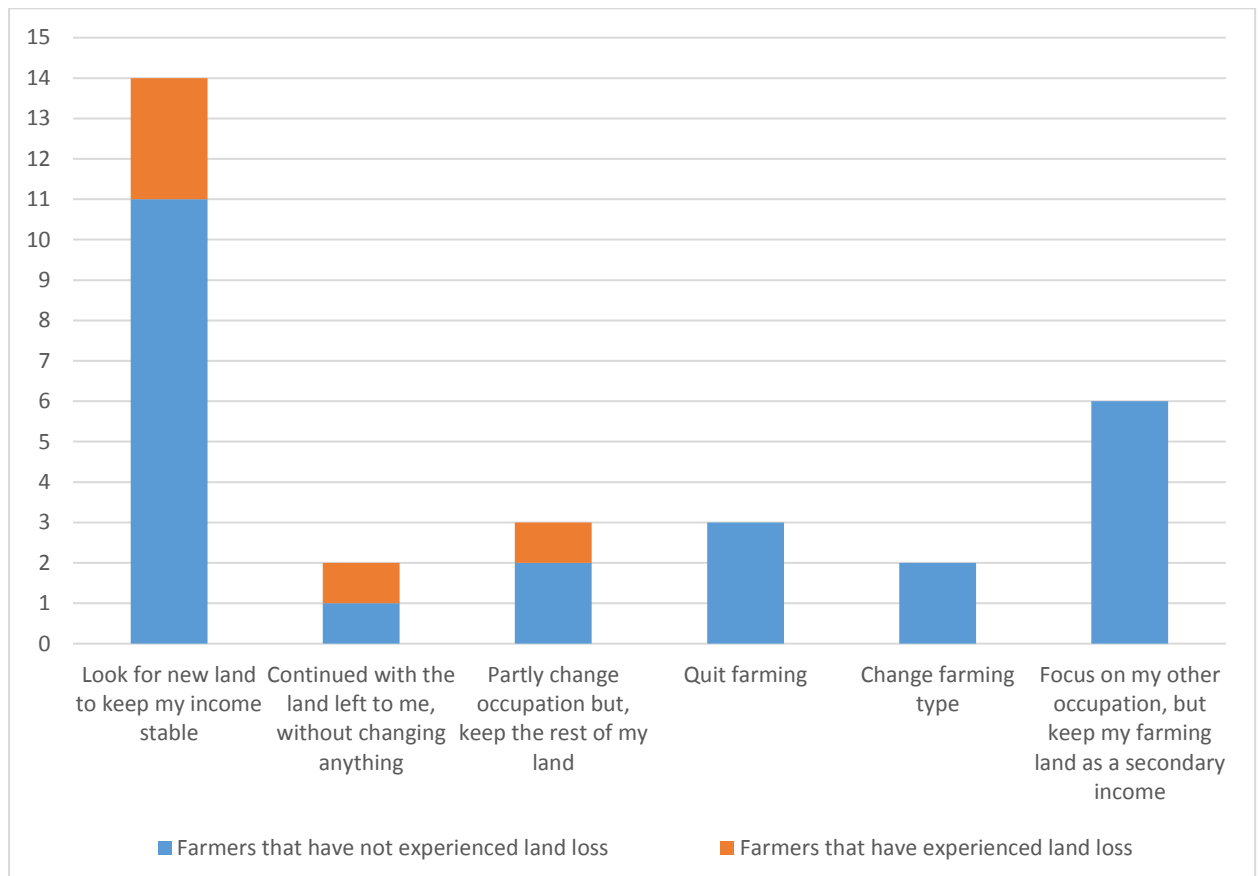
As it is illustrated at the graph above (see Graph 3) only half of the participants are depended only on their farming profits. The other half has either a secondary job or uses farming as a secondary occupation.

From that point and on, the interviews focused on the main topic of the research and the collected data was referred to the land loss due to urban development. Exactly one third of the farmers, had experienced personal situations of land loss. At all of the cases, only extensive

type of farming land was taken. Moreover, the ten incidents of land loss occurred from the period of 1997 till 2008. Five of the farmers that took part in this research claimed that the land loss was of a significant extend and it had affect their overall income. Apparently, the four out of five farmers that lost their land were residents of the urban prefecture, Thessaloniki prefecture. Concerning the amount of land that was taken from farmers hands, it never exceeded the 100 acres. In percentages it can be rephrased from 10% to 30% of their initial farming land. Furthermore, the farmers were questioned about their awareness, if they knew that a situation like this could happen. Obviously, incidents like this have already occurred in the past several of them. Therefore, 23 of the interviewees were aware and prepared that there could be a scenario in the future were they could end up with reduced farming land. The rest of the participants believed that the possibilities for a scenario like this are tending to zero.

The farmers' reaction

Probably the most important question appeared next. The farmers had to answer and explain their reaction after a possible land loss that could affect significantly their income (the farmers that had already experienced this situation were asked to explain the actions that they took at that moment). The most popular reply was to search for new land and replace the gap that was created. Fourteen of the farmers believed that the correct decision would be to find another place for their agriculture activities and from the five farmers that had already lost their land, three of them had already regained their lost farming area at new locations. Most of them replied that they would start immediately the procedure of searching for new land to continue their farming activities.



Graph 4. Reaction of the farmer to land loss

As it is graphically illustrated above (see Graph 4), the next most popular reply was to “focus on my other occupation, but keep my farming land as a secondary income” which seems logical enough since half of the participants have a second occupation (see Graph 3). The rest of the sample, ten in number, provided four less popular answers such as quitting farming entirely or changing farming type, Graph 4 can provide a clear image of all the replies and their frequencies.

The farmers’ reasoning

After each farmer was asked to state his reaction to a probable land loss he was then requested to provide the reasons that led him to that direction. At this point it is important to explain that this was a pretty open question and some of the participants choose to elaborate a lot and some were very brief. However, the replies were very diverse comparing to one another and categorizing them in strict frames was not possible. Nonetheless, some results could be extracted. The first outcome of this question was that the majority of the farmers -27 of them- were providing only economical and occupational reasons, which are actually very close

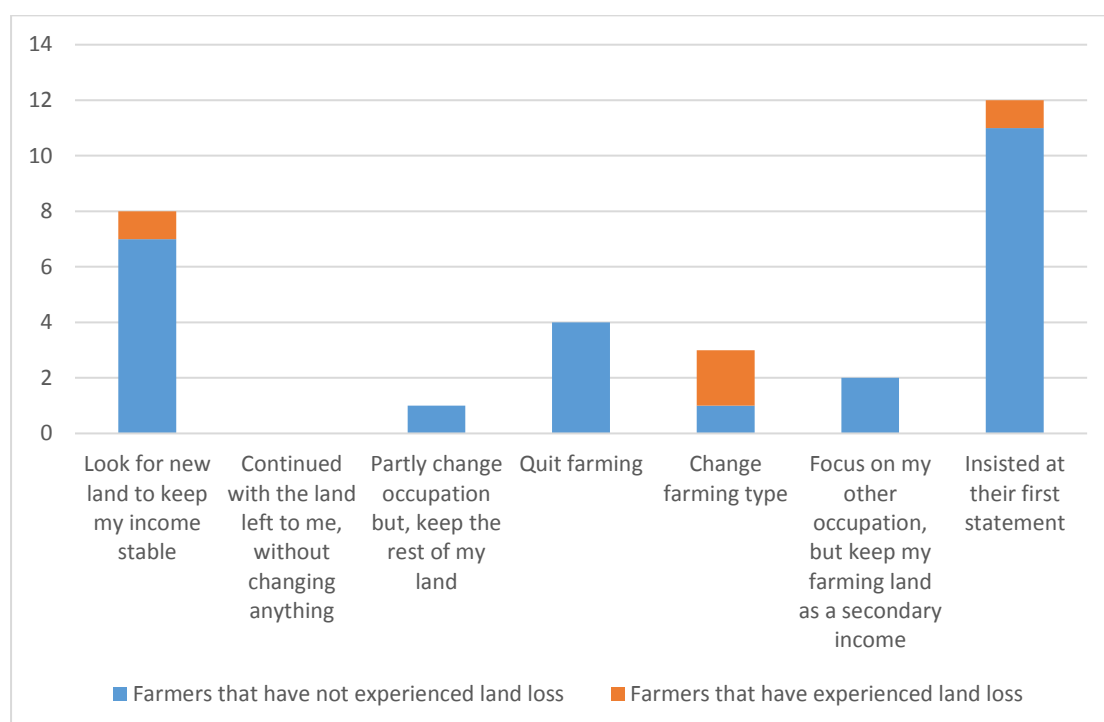
related. Therefore, it is understandable that a possible land loss will affect them in these two sectors of their life.

Continuing, the most popular reasoning to the reactions was the intention to keep a stable profit. Actually, every single participant of the fourteen who replied previously that they would search for new land gave the same exact reasoning, which is to maintain their income. From the interviewees who stated that they would focus on their other occupation, but they would keep their remaining land as a second income, four of them claimed that their second job was going significantly better than farming and there was no point on trying more to deal with these issues. However, they were considering keeping the remaining land as a secondary income and in the future they would decide if they want to continue with it or not. Also, there was another individual who was considering taking the same actions but without mentioning if he was satisfied or not from his second occupation, but saying that he would intend to quit farming, because he was disappointed from the current situation. On the opposite side, we met one farmer that was satisfied enough from his second occupation and he claimed that farming was a hobby for him therefore, despite any change that might occur at his land probably he would not proceed to any kind of reaction. Moreover, the two farmers who replied that they would prefer to change their farming type, they were referring into shifting from extensive to intensive type of farming. They both claimed that at an intensive farm, probable with fruit trees, they would manage to work better since their farm would not be spread in many locations. Also, they mentioned that after the first few years, this type of farming is far more profitable than the extensive and they could keep only their very best fields to make a new farm. Furthermore, one participant who preferred to quit and another that preferred to focus on his second occupation both stated that their reaction was motivated by their intention to move to the city. Moving to the city would mean a lot to them and their families as they claimed. They both argued that they had gotten tired of living at a village and they would prefer all the conveniences that a city can offer. Continuing, another pair of farmers who had replied that one of them would quit and the other would focus on his second job, both gave the same analysis to their reaction. Both had been burdened with economical debts to other farmers or to stores with agriculture supplies and they had realized that terminating their farming activities or keeping them to a minimum, would have a positive effect on their economic issues.

Furthermore, there was a single farmer who argued that when he lost his land eight years ago he partly changed his occupation and started selling the products he was growing by himself to the consumer through the local markets nearby. Eventually he expressed his satisfaction with this decision because ever since this incident he may have to work more but his profit

was almost doubled. Plus the added that he feels now more independent. A similar case like before was with the next participant who would also prefer to partly change occupation but keep the rest of his land. However, this time the farmer was arguing that his intention would be to start his own business besides farming. He also expressed as many others his dissatisfaction with the current state of farming. Last but not least, one of the most interesting interviewee stated that at 2003 he lost about 10% of his crop land. Even if this amount was significant for him he claimed that he didn't reacted at all at that time. He was using this land to grow crops that would feed his animal farms and the size of the crop farm was already larger than needed. However, he considered himself lucky because the urban expansion took over only some of his crops and not the animal farms, therefore even if he lost a significant part he did not take any measures to regain his land. As he stated he has not regret his decision and he has not noticed any changes at his main income.

Subsequently, the inquiry that followed was about the alternatives and if they would consider the different opinions of other people that came across the same situation. Twelve of the respondents insisted at their initial reply claiming that it is the only sustainable solution for them, in order to maintain the same standard in their living. A thought-provoking fact here is that ten out of the twelve respondents had as first pick to search for new land in order to keep their income stable. The other two had chosen before, one of them to quit farming and the other to partly change occupation but keep his land after all. Moreover what is fascinating here is that even eight farmers more responded as a second choice to search for new land, as shown at the graph below (see Graph 5).



Graph 5. Alternative reactions of the farmers

It is impressive enough to observe that the overwhelming majority of the farmers -22 out of 30- would search for new land to replace their loss either as first or as an alternative option. Furthermore, the farmers had to reply about the importance of the ownership and if it affects their reaction. Surprisingly, the opinions differed, twelve of the participants responded positively, meaning they believe that the ownership would affect their decision. Especially when they oscillate between the decision of quitting farming or not. However, the rest of the 18 farmers had the opposite point of view, claiming that the factor of owning the land or not is irrelevant to their decision.

Consequences of the farmers' reactions

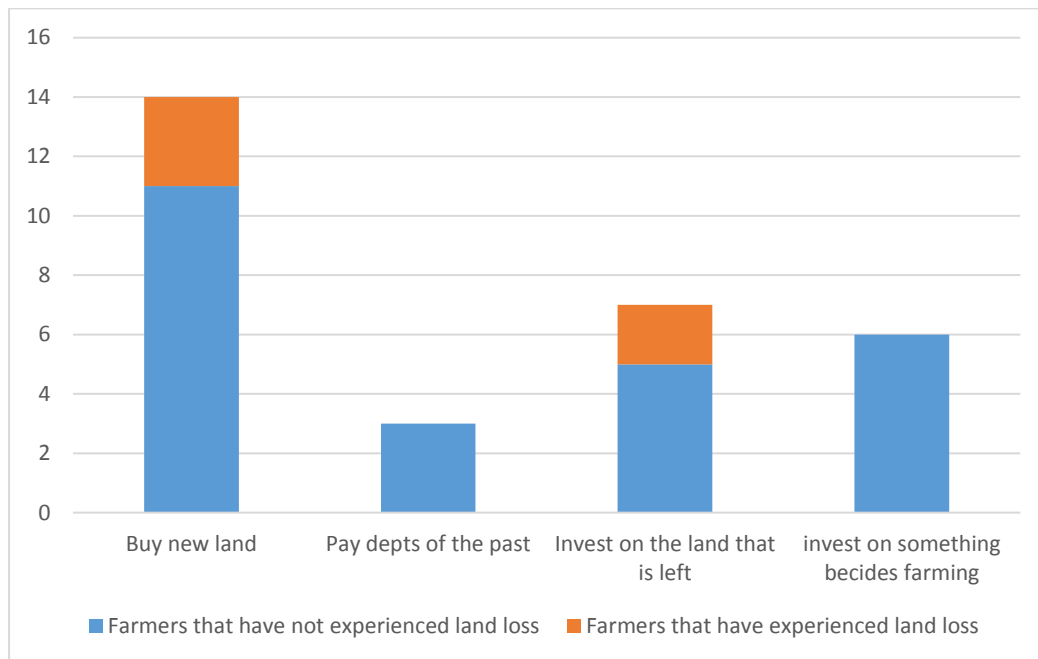
Having a relatively non-complicated conversation until now, the next question puzzled most of the interviewees. They were asked to comment at the consequences of their decision, mostly focusing on the negative side of it. The greater part of the sample, fourteen farmers who replied initially to search for new land, recognized that this whole procedure will have a negative decent impact to their income in the beginning of the transition, until they recover their lost land. Furthermore, they argued that when they would acquire the new farming land, it is most likely to invest even more at it, in order to modify the soil to their needs. For instance, a farmer might need to change the composition of the soil or the pH value in order to meet the needs of a specific crop farm to generate the maximum possible profit. Most of them

concluded that this whole procedure will consume valuable time for them, not only by trying to find the proper land, but also trying to modify the land into their standards. On the other side, the farmers who believe that the best possible option was to partly change occupation or entirely quit farming, claim that this is a risk worth taking, but it is not possible to foresee all the possible consequences. For starters, most of the farmers spoke of a new beginning that could be unknown to them and the probability of failure something that they would need to consider. Obviously, this concerns the people who are not satisfied with their current occupational status and they want to make several changes in their lives. Regarding the farmers who prefer to focus on their second job, but desire keeping the remaining land and the farmers who do not intent to take any actions, they argue that there is a certain probability to degrade their salary. Actually, for the second category the reduction of the income is unavoidable, but as far as the people who will focus on their second job a part of them believed that they could outbalance the lost farming profit with their additional work at their second occupation.

Last but not least, the remaining farmers, that would decide to change the type of farming of their land, they will have to encounter with the difficulties of a new and unknown type of farming. At these unfamiliar circumstances it is possible that they would not possess the knowledge or the expertise in order to generate the profit they desire from the first year.

Compensations

The next part of the interview had to deal with the compensation amount that each farmer would receive when his land would be taken away. The information that was extracted was related on how each individual would spend or invest the amount they receive. Clearly, the farmers who had answered previously that they would search for new land to buy, they would invest the compensation to this purpose (see Graph 6).

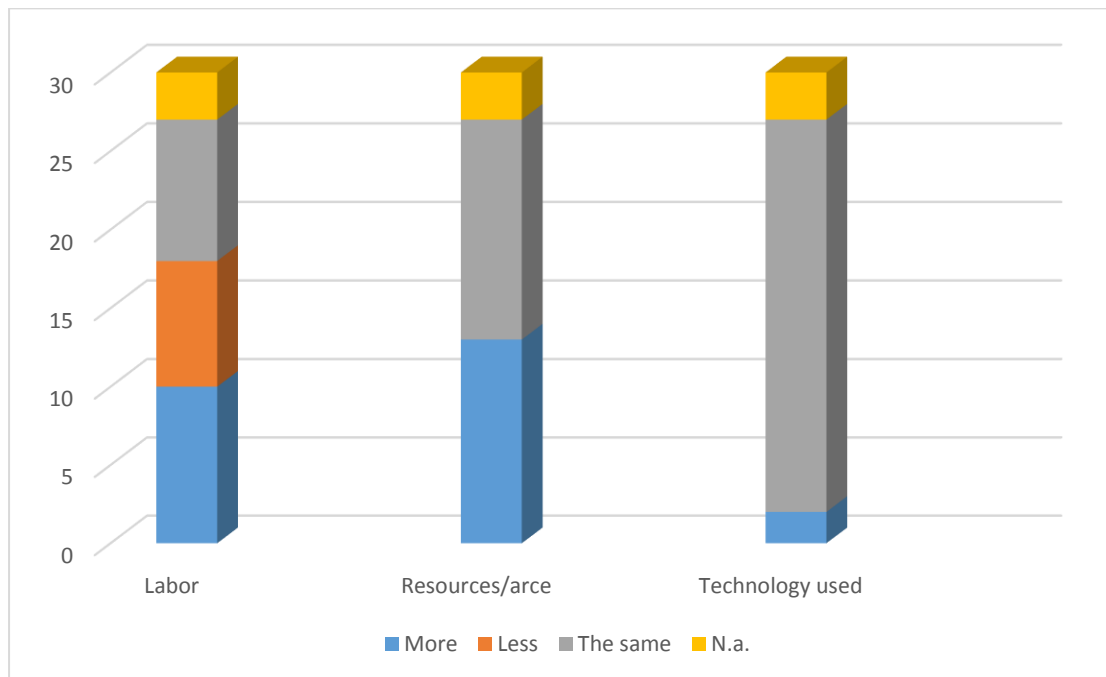


Graph 6. Use of compensation

What is striking about this chart, is that almost one out of three -9 out of 30- farmers would invest the compensation amount away from the farming sector. This means that the agriculture sector can be weakened by this phenomenon because investments will be reduced.

Impacts on the productivity indicators

One of the last points of the interview was referring to the perception of the farmers about their future labor, their resource investment and the technology that they will use afterwards their reaction (see Graph7). Clearly, all the respondents desire to provide less inputs at the field, but from their responses it is obvious to realize that it is not what they expect from the future.



Graph 7. Effects of the reactions on the productivity indicators

Many farmers believed that after all these adjustments to their land they will need to work harder and more efficiently and more intensively for the first years at least. However, the presentence that will quit or will not seek for new territory believe that their working hours will be reduced. Regarding the resources, the interviewees state that they will either remain at the same level or will increase. This is a result mainly because of the modifications that each farmer want to implement to the new land as mentioned above. Finally, the overwhelming majority of the respondents argued that the technology being used nowadays will continue at the same level even if the urban development expand on their farming land. As they explained, they are already using the best available technology they can afford in order to have a maximum production with the least expenses.

Approaching to the end of the interview, all the participants were asked a rather subjective question about their confidence of their answers, especially about the reaction part. Since most of the interviews were made on a hypothetical state, it was relevant to ask how certain they were about their responses. The five farmers that had already experienced land loss were asked if they would react in the same way as in the past and if they have regretted their initial decision. Not all of them responded that they are satisfied with the upshot of their story, but if a similar situation would occur they would definitely seek for new land to replace their loss. It is also remarkable that from the rest of the 25 farmers, eighteen of them claimed to be rather confident and undoubtable about their probable reactions. Of course all of them wished for themselves that a situation like this would not occur.

4.2. Results of the analysis (correlations)

In this part of the paper all the collected data will be analyzed through the guidelines of the analytical framework at the introduction chapter (see Figure 2). At the text below, the focus will be to investigate any correlation between the general and the specific characteristics of a farmer in relation with his –hypothetical- reaction to land loss due to urban expansion.

4.2.1. External and internal factors affecting the farmers' reaction

To begin with, it was investigated if the age of a farmer would affect his probable reaction and the result was that the youngest people from 40 years old and below tend to see various alternatives and solutions in an issue like this. In contrast, the farmers above 41 years agreed in their majority that best possible solution is to seek for new land to replace the loss.

The next variable that was examined was the family conditions. In this case it was noticeable that the single people were significantly less than the married and those who had children were almost equal to those who did not. However, no pattern was found between the family conditions and the farmers' reactions, therefore it was estimated that there is no correlation between those two variables. Of course this result is assumed to be verified among the thirty interviews only, within any possible limitation.

Regarding the two different locations, it was noticed in the beginning that at Thessaloniki prefecture four farmers had already experienced significant land loss comparing to Kilikis which had only one participant with the relative experience. Therefore it was concluded that in an urban area it is more likely to meet urban expansion projects that can affect the farming land. Also, it is important to mention that the farms at the urban prefecture are significantly closer to the urban environment than the farms of the rural prefecture. A fact that might not affect their reaction to land loss but definitely affect the possibilities of losing your land if you are settled near a city. The average distance of a farm to the urban environment at Thessaloniki prefecture is 3,8km and at Kilikis it is 7,8km. In respect to the farmers' reaction, it seems that the majority of the farmers from Kilikis tend to believe that the best reaction is to seek for new land and the second best to focus on their other occupation. At the other prefecture though, they also have as first choice to search for new land, but besides that there is a great variety of replies. Answers from quitting entirely, to partly change occupation, or to change farming type or even focus on their other job.

As mentioned above almost all of the participants had extensive type of farming, so it was pointless to draw any conclusions by that. However, five out of seven farmers who owned an animal farm argued that they would certainly search for new land to recover from their loss. These kind of farmers, usually rely on their extensive farming in order to produce their own

food for their animals farm. Consequently, the correlation in this case is that the breeder cannot afford losing his land without taking any actions towards recovering it.

Coming to the size of a farm, it is very interesting to notice that the few people who considered quitting farming entirely, had also the one of the smallest possessions in land extent, 120, 150 and 400 acres, while the average size was almost 600 acres. On the other hand, from the top ten in land extend eight farmers would prefer to seek new land and replace any loss that they might have. It is clear that the size of the farm plays great role in the mind of the farmer when deciding who to react. The smaller the size of land the easier the decision to abandon it or to keep it as a secondary occupation.

While trying to correlate the occupational status with the reactions of the farmers, it became clear that the overwhelming majority -14 out of 15- that had farming as the only job in their life had no other option but to search for replacement land. Although, there was a single case that considered changing farming type, the rest of the farmers seem very confident about their reaction. As for the people who considered farming as a secondary income, they were more tending to focus on their other occupation or even quit farming.

Finally it was investigated if ownership plays a role to the reaction of the farmers. In this case the opinions were divided almost in half. Twelve farmers believed that indeed ownership could affect their reaction but the rest had an opposite opinion, therefore it was assumed that ownership is not correlated to the reaction of a probable land loss.

4.2.2. Impacts on farming productivity

In the second part of analyzing the results, it was investigated how the reactions of the farmers can affect the productivity indicators (see Figure 1). To begin with, the farmers who stated that they would search for new land believed that eventually they will need to work more or exactly the same. This answer can be justified by the information provided from the interviewees in regard with process that occurs when they buy new land and they try to adjust it to their standards. On the other side the people who argued that they would quit or they would focus on their second occupation, obviously enough believed that they would work less in the future even if they maintain their remaining land. Concluding, the labor in a farm is related closely to the farmers' reaction to land loss.

Proceeding with the resources that will be used in farming/acre into the future none of the interviewees believed that they would be reduced. In contrast, almost half of the farmers -14- believed that the resources will remain stable and the rest of them that they will increase. However, it seemed that the people who would look for new land believed that they would also need to invest more resources at their farming practices at the future. Therefore, the

reaction of the farmers is highly connected to the resources that they will use per acre in the future.

The last indicator that affects the productivity of the farmers is the technology that they use at their farms. What was found is that apart from the people who would quit entirely their farming activities, only two of them believed that they would need more advanced technology on their field. Moreover, the two farmers had already expressed their interest on the intensive type of farming, so probably this intention could justify their opinion and their reply, because of the belief that an intensive farm needs more expertise and technological usage. As for the rest 25 farmers, they insisted that the technology they will use in the future will not be affected by a probable land loss. Therefore, it is assumed that the reaction of a farmer to land loss does not affect the technology that is used.

Last but not least, the farmers have been asked about their confidence in their replies, which is an indicator that shows how certain they are at their probable reactions. Obviously, the five farmers that had already experienced land loss responded about their possible regret of their past decision and if they would follow the same path in the future. However, several correlations were found in regard with their confidence. Although, it is not part of the research to examine these relations, it is important to mention that the most confident participants were the farmers who possess large amount of land. In contrast the ‘small’ farmers were not so sure about their replies. Finally, it seemed that the individuals who chose the option of searching for new land to keep their farming extent stable were much more confident in their decision than the rest.

5. Discussion

This chapter answers the research questions and discusses the research objective. Moreover, it tests the coherence of the theoretical framework and its modification after considering the results. Finally, the most significant findings are pointed out and the effects of the economic crisis on the research are explained, along with similar cases from other countries.

5.1. Research objective and research questions

This study's purpose, as discussed at the first chapter, was as follows:

This research will aim to explore the actions that a farmer take, when urban expansion takes over a part of his farming land and it will emphasize on understanding the reasoning that drives him towards these actions. Additionally, the research will investigate which variables drive farmers to their actions and what are the impacts on farming productivity.

To achieve this aim, a general research question was generated and later divided in smaller sub-questions. This objective's goal is to generate knowledge and provide information towards the farming society, the planners that relate to similar topics and to the respective academic community. By answering the sub-research questions an effort is made to contribute to the research objective that was just mentioned. Each question is referred at the general research question of this study **-How do farmers react at an upcoming urban expansion towards their land?-** which was generated by the research objective.

What are the possible options for a farmer to follow when a part of his land will be lost owing to urban expansion?

To begin with, the first research question was seeking information about all the possible options for a farmer to follow, when part of his land will be lost owing to urban expansion. The thirty participants replied with various answers (see Graph 4), but the most popular was that they would search for new land in order to replace the part that they would lose. Obviously, this reply was certainly expected, since it is considered to be a "safe" option and also very logical to follow. Overall, the farmers replied with six different answers which provided a controversial impression. On the one hand it implies that there are several options for a farmer to follow, but on the other hand not all reactions are suitable for every farmer. However, having answers such as quitting or partly changing occupation is a clear sign that the farming community is not completely satisfied with the current situation that exists on the field. For example many participants were considering to start a new business but also continue farming as an additional income or even stop entirely their farming activities. In

addition to this conclusion, half of the interviewed farmers were also occupied with something different than farming. It is understood that farmers either do not believe that they can have a stable income through their agriculture activities or that the provided income by agriculture is not sufficient enough for them. Continuing with the reactions on land loss, there was a group of interviewees which stated that they would consider shifting farming type from extensive to either animal farming or to intensive farming, in order to keep their income stable. In contrast to the previous answers, these replies show their intension to stay at the same profession, believing that farming can be a reliable option for their future. Finally, it was very interesting receiving unique answers too, because it justifies the initial hypothesis in which it is claimed that the farmer's reaction is depended on his unique features, internal or external. A very characteristic example came from the farmer that had already lost a part of his land, in which his reaction was to do absolutely nothing, since he had more land in his property than what he needed, as he claimed. Concluding, these options were extracted only from the thirty interviews of this research, which means that there might be other options too that have not been investigated yet.

What are the reasons that lead the farmers to these options?

Regarding the second sub-question of the research, this study's purpose was to investigate the reasons that motivate the farmers towards the reactions that are mentioned above. As expected, the overwhelming majority of the received answers had to deal with economic reasons. The aim for most of the farmers is to keep their income at a stable level and continue their lives with the least possible losses. This kind of reasoning was referring mostly to farmers who would search for new land if needed, but also to people who had a few debts and wanted to find a way to pay them up. However, few ambitious individuals were spotted because of their answers. Some people wanted to exceed their current living state and make a step further in their career. Several individuals claimed that they would prefer to focus on their other occupation and others that they would consider starting a new business besides farming. The outcome of these replies is that there is a part of the farming community which believes that an unexpected land loss can be an opportunity for them to make a shift in their career and increase their income. However, there is also a last group of people which is willing to make several changes in their lives, but the income is not the motivation. The driving reasons are personal and different for each individual. Some people placed higher their preferable occupation in compare to their income, stating that they want to work on what they have studied at colleague. Others, considered most the needs of their family and some were just seeking for new experiences in their future and argued that they intend to settle in a city. In general, it can be assumed that the most important reason which can drive the farmer

to his decision is the maintenance of his income, however it is necessary to consider the unique characteristics of each farmer because in many cases they can affect his reactions too.

Which factors can affect the farmers' decisions?

Proceeding to the third research question, this paper aimed to answer which factors can affect the farmers' decisions. The first factor that was found was the age of the farmer. The young farmers seem to be less attached to their profession and tend to try more developing new options on how to recover from the land loss, in contrast to the older farmers who insist at searching for new land to buy and replenish the gap. As for the family conditions it was investigated that there is no correlation with the farmers' reactions. On the other hand the location of a farm is a variable that plays great role to their reactions. It was examined that the farmers who are settled nearby urban areas have more options on how to react at a probable land loss and it is observed that they are more likely to diverge from the agriculture field. They consider options such as urban agriculture or starting a new business into the urban grid or even promote their products by themselves to the local markets. In contrast, those who are settled at the rural areas seem to have limited options and for the majority the most probable reaction is to seek for new land. Regarding the type of farming, this research could not produce any results about the extensive type, because all of the participants were farming extensively. However, the factor of having an animal farm seemed to have an effect on the farmers' reaction. All the breeders reacted in the same way and they insisted on seeking new land to replace their loss. Regarding the size of the farm, it can definitely affect the farmers' reaction. The owners of the smaller farms tend to be more open to the option of changing occupation and even quitting from farming, but on the other side the farmers that possess the large amounts of land claimed that they would try to recover from the land loss by replacing their land. The last factor that was found to have an impact on the farmers' decision was the occupation of the farmer. It is true that a great amount of farmers have a second job either as a secondary income or as primary. However, the individuals who state that farming is their only occupation, they all seem to react exactly in the same way. All of them seem to have only one possible solution, which is of course to replenish their lost land with new. Finally, the last factor that was examined is the ownership of the land. In this case the replies were divided in half, therefore no significant result could be extracted, and eventually it is assumed that the ownership is irrelevant to the farmers' reaction.

Summarizing the results in this question, it seems that according to this limited research, from the factors that were examined five of them can affect the farmer's reaction, the age, the location of the farm, the type of the farm, the size of the farm and lastly the occupational status. However, as it is already mentioned, this research examined only some basic factors

and until a specific depth. Therefore, it should be expected that other factors can also play a role and even some of the examined factors might differ if investigated even deeply. The outcome is that factors which can affect the farmer's decision exist and they can be used in benefit of the planner's work.

What are the consequences of each option for a farmer after a change like this?

This question focused mostly on the negative part of the consequences in order to evaluate the effects and the difficulties that a farmer might face due to land loss. Almost half of the participants claimed that if they will need to find new land to farm, the first period will be tough for them. They argued that finding new land is a hard task to accomplish, since the available land is either of bad quality or too expensive. Moreover, they might need to modify the land to their needs for every different farming activity. In general, they claimed that this procedure will cost them in time and in money also. On the other side, the farmers who prefer to change their occupation partly or even entirely were discussing about risk issues they might face. Greece is a country in the middle of a crisis and trying to make a new beginning in this time period is definitely an action that consists risking your savings and your investments. Furthermore, there was a group of people who would choose focusing on their second occupation and might not make any changes at their farming practices. For that category of people the consequences regard a possible reduction of their income, which makes sense because they are not willing to make any changes at their land nor at their practices. Last but not least, few participants replied that they would prefer to change the type of the farm that they work on. For those people the consequences the least significant comparing to the previous cases. The only risk is that they will need to work on a farm that they might not have the expertise in the very beginning, although they can easily find guidance. Overall, it could be said that the main risks and consequences in the reactions that have been mentioned above is a probable significant reduction of the farming income and the overtaking of a risk when trying to find new available land or trying to start a new business.

How can these reactions affect the productivity of a farmer?

It is already explained at the theoretical framework chapter, the production of a farmer is depended on five indicators (see Figure 1), the weather conditions, the labor, the resources, the technology and the availability of the land. The initial hypothesis was that the reaction of the farmers to land loss can affect these indicators, except the weather conditions of course. In this study it is not examined which indicator is more significant than the other, but it is examined how can each one of them be affected by the farmers' reaction. The problem description in this paper already describes that the available farming land is getting reduced, therefore it can be realized that the overall production is driven towards the same direction.

Nonetheless, the reduction of the land is the basic fact of this research, the actual question is if and how do the other indicators get affected.

Initially, the labor input was examined, however, there was no clear result on the correlation between the reactions of the farmers and their future labor. Different points of view existed equally among individuals who believed that either their labor would be reduced because of the land reduction or among farmers that would need to work more for the new land that they would need to purchase. Moreover, there were individuals who could not foresee a change at that their amount of labor and stated that it is possible to remain stable. Therefore, the assumption that results from this question, is that the overall labor will be reduced, since the amount of land is shrinking, but the labor input per acre will increase because the remaining farmers will need to work more on their new properties. Eventually, this phenomenon could affect productivity both positively and negatively, depending on the balance of the amount of working labor.

Regarding the invested resources that will be used in the future, the opinions about this topic were divided in two groups. Some of the farmers believe that the amount of resources will remain stable, but the rest of the sample believed that the amount of resources will increase, because they will need to modify once again their new property to their own needs. Therefore the outcome of this situation is that the input of resources per acre will probably increase and affect positively the farming productivity.

Finally, the last indicator which is technology, is not expected to be affected by the reduction of the land. The majority of the farmers were certain that they would not change their current usage of technology because of a probable land loss.

As a result, the reactions of the farmers can affect only their future labor and their resources input. From both indicators, an increment is expected in their values per acre, which leads to the assumption that productivity will tend to increase. This outcome justifies the hypothesis that was made earlier in this report, which stated that the farmers will try to maintain their profits at the same level-. However, while one of the indicators –the available land- is being reduced, the other two indicators try to outbalance the change that occurs. Even if some of the indicators have an opposite direction toward their values, the land reduction appears to be significant enough in order to drive the whole equation to a negative result. Nevertheless, this is an assumption which has not been examined and it needs further investigation from future research studies.

5.2. Modification of the research framework

Answering the research questions led into rethinking the conceptual framework that was created before the data collection and analysis of this study. The result was modifying it while taking into account the new findings and outcomes, in order to create a clear image of the current situation. The Figure 5 below demonstrates the new framework which consists some different and some new features.

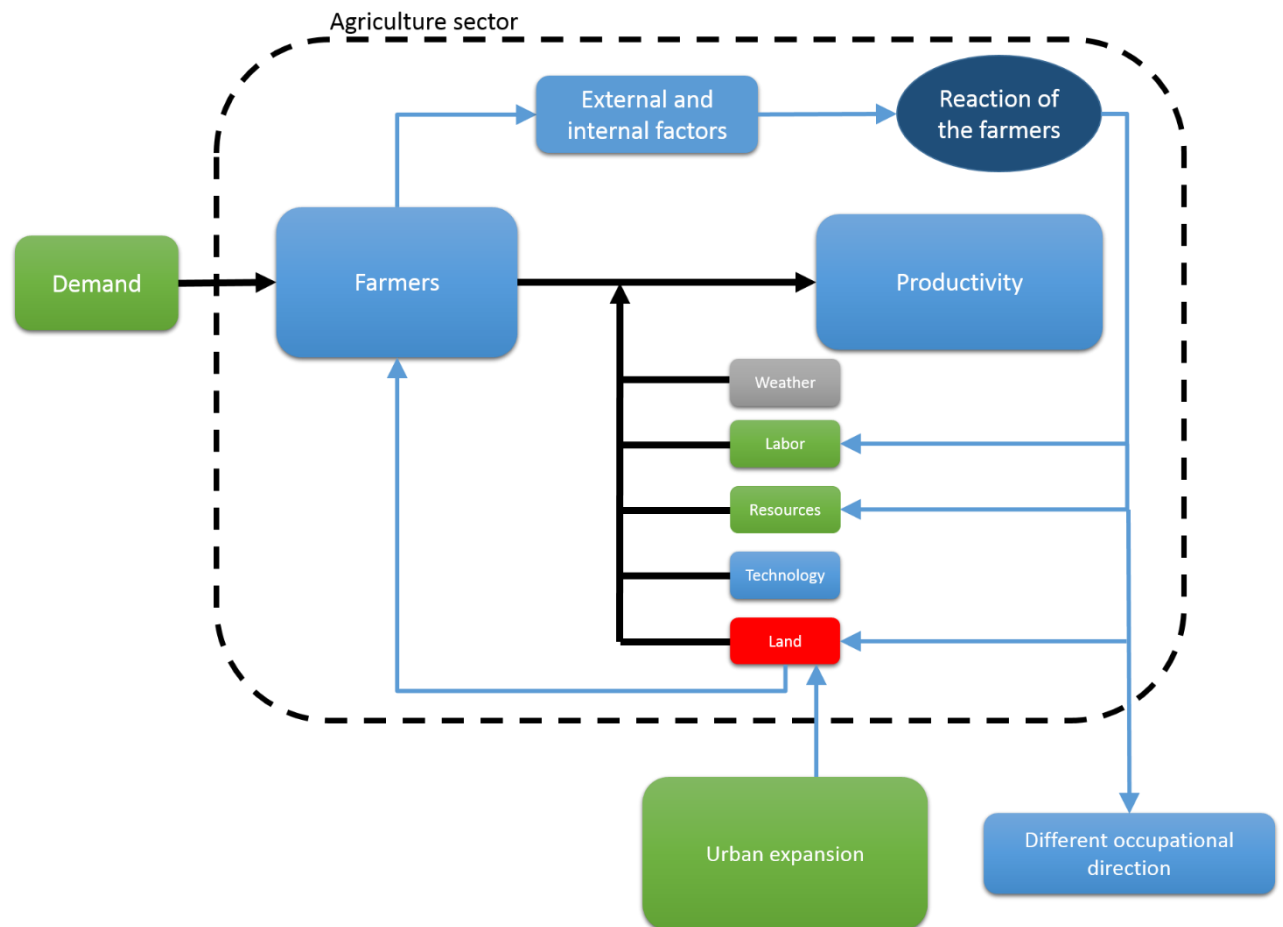


Figure 5. Modified theoretical framework.

To begin with, the borders of the agriculture sector are being clarified. It is essential to realize if the elements which are affecting the linear process of productivity -and the circular correlation from the farmers' reaction to the productivity indicators- are external or internal. The demand for agriculture products and the urban expansion are both forces which can unsettle the farming production. Moreover, identifying the borders of the sector makes clear that the changes which occur outside of the limits can lead farmers over the borders too. Therefore it is logical to assume that urban expansion is preventing people from occupying with farming.

Regarding the indicators, now it is clear that the land reduction is forcing an increment at the labor and the resources that are being used, however the technological indicator is being untouched. However, what is not clear yet, is the final effect on productivity. Three of the indicators are unstable and without knowing the weight of effect in each indicator it is not possible to foresee how productivity can be altered.

5.3. Points of attention

In this part of the report a reflection on the most significant results is presented. The interviews and the analysis part provided numerous information about the current situation, but some results were more distinct and need to be investigated even more.

The planner's perception

To begin with, this research began with the interview at the spatial planning department of Thessaloniki (see Chapter 4.1.1). The first impression was positive and the interviewee tried to convince me, that planners consider the needs of the farming society –not that they do not-. However, half way of the conversation it was reported that planners have a belief in which they consider urban expansion projects as an improvement for the quality of life of the citizens and they place the farming production in a secondary priority. Probably that is the case and that is how the problem generates. Setting aside farming is the reason why its land extend is being reduced and the urban areas are overtaking the land. In regard with the planner's perception about the farming problems that occur, the public bodies seem to be well informed about the situation that exists and they try assist the farmers with several means –but rather unsuccessful as the planner mentioned-. The initiatives for assistance from the public sector maybe are an act of good will but if the private sector will not follow or cooperate at the same tempo the results probably will not change. Moreover, it is important to mention that the planners should not only focus on how to assist a farmer with his issues, but rather to prevent these issues appearing in advance. To achieve that, the farming sector should be considered as priority and not as secondary comparing to urban expansion.

The occupational status

The part of the research which provided the most information, both in quality and in quantity, was the interviews with the farmers. The most striking result was that half of the selected sample had another occupation besides farming. As an experienced with farmers person, it was expected to meet people with more than one occupation, but the ratio was impressive. Having a fifty percent of the sample occupied also at other fields than farming, creates the impression that agriculture either does not provide a stable and satisfying income or it provides much of a free time or even both. The first case scenario –that farming is not very

profitable- is an issue that needs to be talked. And as it was already discussed, the urban expansion prevents people from developing farming activities. In combination with the agriculture sector being less appealing for economic reasons comparing to other professions, the farming population might face a crisis and shrink in its size. In order to continue developing the agriculture in Greece it is essential to try recruiting more individuals than preventing them from joining.

The farmers' reaction and their alternatives

The purpose of this paper was to explore the farmers' reaction to land loss, which was included also at one of the research questions. As expected the majority would choose to search for new land and replace the gap that was created. What came as a surprise was the fact that the farmers gave five more responses. A personal hypothesis was that 80% or 90% of the farmers would follow the 'safe path' which is to replace their land. However, the young individuals with smaller amount of land and modernized way of thinking, proved from their answers that they can be imaginative and think plenty of ways to overcome a difficult situation. The variety of the replies creates the perception that if the research was conducted with a greater sample size the replies would differ even more. Nonetheless, a significant amount of people had already another occupation and in their case, they had an alternative to this economic problem the face.

Additionally, the farmers were asked to select a second option too, in case they would not be able to fulfill their first option. In this case the expected high ratio of the reply; search for new land to replace the loss, was confirmed. Another eight people –and 14 in the initial reaction- claimed that seeking for new land is the next best option. Moreover, a major part of the participants who gave this answer as their first reaction, stated that this was the only option and any other alternative would not work for them. A statement that proves how important is the farming income to some persons. Perhaps it is already mentioned before that the qualified and ambitious farmers might see this situation as an opportunity, but for others changing occupational direction is not an option because they are depended 100% on agriculture.

Farmers' reasoning and consequences

The answer to one of the sub-research questions already presented the reasoning of the farmers to their reaction and the conclusion was that the majority of the farmers consider most to maintain a balance to their income. In a period of crisis, like now, it is a surprise that not all the responds had an economic background.

Moreover, the farming society seem rather conscious on their decisions and aware of the possible consequences. When asking about the consequences of their reaction it was clear that

the farmers were trying to justify their opinion because they were elaborating on the choice with least negative impact on them. The majority of the replies was referring to economic aspects, which also includes taking risks and dealing with consumption of extra time and additional labor. Obviously, the consequences extend much further, but the farmers chose to discuss these specific topics because they seem more concerned on them.

Factors that affect the farmers' reaction

In the relevant research question, it was pointed out that the factors which can affect the reaction of a farmer are his age, his occupation, the farming type he possesses and the size and location of his farm.

What came as a surprise was that from the statistical analysis no differences were found between the different family conditions. Three basic options of the variable were examined (married, married with children and single), but the reactions did not seem to be affected by any. Of course the possibility of a statistical error is considered, since the sample cannot represent the entire population. However, what might be interesting is to examine further this factor and more in depth. In Greece it is very common for the elders to try create a dower for their children, a dower is usually consisted of real estate, cars, stocks and anything that might have a decent value, such as a farming business. Therefore, having a large family with many kids might play a role to some farmers' way of thinking, although in this point of the research it is just food for thought. Another unexpected result was that the ownership of the land had no effect on their decisions too. The Greek farmers usually rent for long term the fields that they work on, therefore it is assumed that they get attached to them in the same way as if they own them. The only difference that can be spotted is that farmers who own their land obviously do not need to pay for rent and consequently they are more profitable in their job. An interesting topic to be investigated is why the most profitable individuals do not react differently from the rest.

On the other hand, the factors that were found affecting the farmers' reactions were more in number. The farming type and the location and size of a farm usually indicate the value of the farm. Commonly, the animal or intensive, large farms located close to a city are priced high. Therefore, this fact can justify why the owners of these farms are more attached to their farming business, because they have more to lose comparing to the other farmers. Additionally, the age of the farmers is a variable which shows that younger farmers are more familiar and open ideas of doing something different and new for them. If considered that the older farmers possess more land and earn more than the younger –which is also typical for Greece- it is understandable why young farmers are not so attached to agriculture.

Compensation amount

The last significant point of attention of the results is concerning the compensation amount the farmers get and the way they spend it. Common logic would suggest to invest on the remaining land or to use it for purchasing new land and recover from the loss. Partly the expectations were confirmed by the results, but plenty of individuals, almost one out of three participants choose to spend their money differently. These people would choose to pay up any debts they have created or invest on their second occupation. The case is not where this amount will be spent, but why it is not invested in the agriculture field. In that way the sector is getting weakened and as a result the overall production might not reach the demands. For a country like Greece, not reaching the demands of agriculture products means reducing exporting and even maybe start importing goods that are already being produced here. This phenomenon could burden the economy of the country and amplify the crisis.

5.4. The crisis effect

As it is commonly known, a unique phenomenon occurs in Greece at this very moment. The economic crisis that erupted nine years ago (Madianos et al., 2014) might not be a newfound phenomenon, but the extent and the way that is treated are unseen. It is already mentioned at the introduction chapter that agriculture is one of the most productive sectors for the Greek economy and supporting it is essential for the effort that is made to overcome the crisis. However, what should be discussed is how the crisis has affected this research. To begin with, among the thirty participants eleven of them had already experienced land loss. Chronologically, the latest incident occurred at 2008, which was the beginning of the crisis. It seems that with the start of the crisis, the urban development stopped or at least have been reduced drastically (Kouretas and Vlamis, 2010). However, one of the positive effects of crisis is that urban expansion has been reduced along with the urban projects that used to take over the farming land. If this topic will be researched further in the future, there should be a clear distinction between the crisis period –which is still ongoing- and the period before 2008. In the methodology of this study, the crisis factor was not taken into consideration and it is very probable to find different reactions among farmers during the crisis period and during a normal period. It is true that farming is not considered stable regarding the income it provides (Mishra and Sandretto, 2002) and this is one of the major reasons why people prefer to have different occupations. The unstableness is caused by the uncertainty of the weather and the annual fluctuation of the prices in the agriculture products. However, during the financial crisis in Greece, most of the sectors became unstable too and having a permanent and average paid profession is considered as luxury. As a result it is possible -if the crisis would not affect

the research- to have more responses of the type quit farming or focusing on another occupation, because the other professions would appear to be more appealing than farming.

5.5. Similar cases

The introduction chapter pointed out that the reduction of farming land and eventually the challenge of reaching the demands for agriculture products, is a global phenomenon. In all dense continents the urban grids tend to expand, resulting into taking over the agriculture land (Seto et al., 2011). This issue is more obvious at countries that their economy has shifted from mainly agricultural to industrial, therefore abandoned and even occupied agricultural lands are lost to urbanization (Del Mar Lopez et al., 2001). Countries such as Japan, Taiwan, South Korea, China and many areas in the southeastern coast at the United States in only few decades have lost up to 50% of their cropland (Del Mar Lopez et al., 2001). However, these countries and especially the Asian are much different from Greece and their population increase rate is a factor that makes the problem more intense. Nonetheless, their perception and the measures taken to tackle this issue can still be considered, because the effects of urbanization are more excessive to their countries and a solution is more vital for these cases.

Yet, in this part of the report it is important to introduce countries which are facing or have faced the same issue and they share more common characteristics with Greece.

Characteristics such as a recent financial crisis, a similar dense in population distribution and a comparable latitude because it can determine the kind of agriculture products that are produced and the climate conditions. An example as such is Puerto Rico that is also challenged by an ongoing economic crisis due to the debts of their government (Remmer, 1991). Puerto Rico forty years ago had 11.3% urban areas distribution ratio, now this presentence is tripled and as a result the agriculture cropland areas have decreased dramatically (Del Mar Lopez et al., 2001). Subsequently, the island is not producing food at its full capacity and the rates of importing farming products have increased more than ever. Still a solution is being missing and the planners try to shift this ratio of cropland and urban areas to its previous status.

Another example is Spain, in which their planning system has not yet been capable to contain urban growth and the impacts are focused on agriculture areas (Paül and Tonts, 2005). Similar to the previous case, the last four decades over half a million of hectares of agriculture land have been transformed into urban land (Barbero-Sierra et al., 2013). In regard with the financial crisis, the same situation occurs as in Greece. The economic crisis has exploded the construction bubble which has been rather intense in the country and the planners seem to believe that it is unlikely to return back to the urban growth rates of 2000-2008. Eventually,

there is the belief that the lessons have been learned and with rational and innovative spatial planning measures the situation will not get out of hands like in the past.

What is understood from my literature studies until now, is that the discussed issue is relevant at an EU level (Barbero-Sierra et al., 2013) and it exists with similar characteristics at a global scale too. The only differences is in the numbers of each country and the extent of the problem in each case. In general, the urbanization rates exploded the last three or four decades –depending on each country- and approximately doubled the size of urban areas. For example in Portugal, the urban areas increased about 91.1% from the beginning of the 90s till their own economic crisis (Araya and Cabral, 2010). Additionally, in Italy the expansion of the cities and the commuting infrastructure are still expanding in high rates (Travisi et al., 2010), which shows that comparing to the previous countries the crisis had lower effect. Therefore, it can be assumed that Italy will have to face more direct and serious consequences to its agriculture sector. However, in both cases there is an effort by their governments to minimize the consequences and create a plan for a better future.

Concluding, it is important to mention that most of the countries around the globe face a similar problem but it varies on its extent. For the countries that are experiencing an economic crisis right now, they have a second change in fixing the situation and prevent from happening again. Obviously, the financial crisis is not a positive phenomenon, but it is essential to take advantage of its few benefits. What needs to be done mostly weighs each country's government. Certain regulations and measures need to be reexamined and develop new innovative ideas that will support the agriculture sector. It is essential to concentrate development into certain areas and encourage vertical construction when possible. The mass transportation systems need to be upgraded in order to have efficiency in the least possible space and finally, there is a necessity to promote acquisition and preservation of agriculture important public lands (Del Mar Lopez et al., 2001).

6. Conclusion

Proceeding to the end of this paper, the conclusion chapter will reflect on the current situation in Greece and will attempt to provide some guidelines towards both the planners and the farming society. Moreover, few suggestions for more in depth research of the topic are recommended, which can support some of the hypothesis that are mentioned. Finally, the chapter and the entire thesis comes to an end with an overall brief discussion about the current situation in relation to the finding of the results.

6.1. The current situation and guidelines for improvement

It is true that the crisis has been beneficial for Greece regarding the issue of urban expansion. As the research has shown it is not common anymore to have cropland overtaken from urban projects. However, this fact does not mean that the available land is enough and the after the crisis period it will continue in the same ratio. The current regulations and the measurements to control urban sprawl seem rather weak and when it comes to the private sector everything seems purchasable. But even for both the public and the private sector the opportunities for ephemeral profit are very tempting and hard to resist.

From the farmers' point of view, the high percentage of individuals who are considering quitting their occupation can be characterized at least as disappointing, especially during the crisis period. The agriculture society is also experiencing a crisis, but not necessary a financial one. Comparing to other sectors, agriculture is still standing well, but these kind of external pressures makes it difficult to attract a new individuals to the profession.

The aim of this research was to generate knowledge about this issue and eventually use this knowledge to provide information and guidelines both to the planners and the farmers. Being a spatial planner is not only about developing and modifying the city plan, but also about creating regulations that will make clear to any possible investors where they can develop their business. Unfortunately, in Greece the planners modifying over and over the initial city plan –by expanding it- when they observe tendency for urban investments close to the city limits. What is necessary to be done is to have a long term plan that will be abided. The zone regulations must become more stern and accurate in the future in order to contain urbanism within its borders. Moreover, it is time to introduce new and tested concepts to our society, such as the vertical development and more efficient usage of the space we possess. Also,

farming should penetrate the urban grid and urban farming projects should be developed in order to feed the cities faster and cheaper. Last but not least, from my personal perspective a new spatial plan should be designed to determine the limits of the agriculture land. Right now it seems that agriculture land exists in places where there is no other exploitation of the land. It is essential to calculate the ratio of farming land we need as a country, in order to feed our cities and export another amount in order to feed our economy. It is vital to have a determined amount of farming land stable and later on preserve it, even if it will mean to delay the urban development.

Concerning the farmers' side, this paper can provide guidelines in regard to the most suitable reaction that they should have in a land loss situation. First of all, they should be encouraged to remain in the sector, not only because their contribution is needed for the good sake of economy, but because in times like this –financial crisis- the sector of agriculture can provide more than any other sector. However, as proven from the results, the farmers are asked to consider their own personal features in order to take the correct decision. They have to take into account their personal and family needs and weight their probable benefits and losses. Moreover, they should try to exploit more the assistance of the government in the cases of land loss and insist on finding solutions that will maintain the overall farming land stable. From my personal point of view it is worth spending all the available time and resources at the search for new land and recover from the loss. Nowadays, the technology can easily manipulate the composition of the soil in any needed manner. This option has also the least financial risks and it assist agriculture to remain stable. Moreover, ideas such as urban or even vertical farming should be considered too, because they are partly supported financially and they can also offer a solution to the problem of land scarcity.

6.2. Further research

It is already very obvious that the crisis factor has been involved a lot at the research. Even if the approach of this research did not include any considerations about the crisis, the effects on the results were obvious. Not a single incident of land loss found after the year 2008. If this research had a wider word limit and time extent it would be interesting to examine in detail the effects of the crisis, both in urban and agriculture development. More stimulating would be to explore the effects of the crisis at the farmers' reaction and their behavior in the future – after the crisis period-.

Furthermore, another interesting topic that would need more investigation and elaboration is about the productivity indicators. The theory was that the weather conditions, the labor input, the resources, the used technology and the availability of the land are determining the final

production. After the data collection, it was concluded that the land reduction will eventually affect the resources that will be used and the labor of the farmers. The inquiry that was immediately generated had to do about the balance of the equation. If the increase of labor and the resources would be enough to poise the land reduction. In order to answer this question it is necessary to examine the weight of each indicator of the equation and observe how they interact with each other.

6.3. Last impression

Concluding this research and this paper, an assessment and a review of the whole process is made. This project has provided me with many experiences on how to conduct a proper research and even if I considered myself as a well-informed person about the agriculture sector, all these new information have modified my point of view.

Besides the results of the research, two conclusions have been engraved in mind. The first one is the individuality of each farmer. Now it is clear that not all individuals can be categorized. It is hard to believe that finding so many different stories in the farmers' reaction was an incidence out of luck and probability. Maybe the majority share the same common logic and setting of priorities, but when it came to the part of reasoning and explain the reactions the diversity was very noticeable. This phenomenon can clarify why the job of the planners is very important and can be really complicated. The personal features of each individual differ and trying to assist each one of them with the same plan seems to be practically impossible. This is also one of the reasons why the given guidelines might not be suitable for each case.

Finally, the last point of attention that was extracted is the perception of the farmers about their sector. The overwhelming majority expressed a dissatisfaction about the current situation in agriculture. It is suspected that the reason for this reaction is the economic crisis, but none of the participants commented on how their sector is one of the least affected. However, this is not the point, the matter is that this dissatisfaction can cause financial losses to the sector. As mentioned, many farmers consider quitting and changing occupation without even knowing the circumstances that occur at other professions.

Hopefully, the future will be brighter in Greece and the effects of crisis will disappear not only from agriculture but from every occupational sector. And until then, maybe the city plan and the regulations about spatial expansion will be modified for the better. After all, this is what the planners have to do, under any kind of circumstances.

7. References

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8. Annex

8.1. Interview structure

- Break the ice chat.
- Introduction to the research
- Personal information.
 - Name
 - Age
 - Family conditions
 - Location of residence
 - Distance from the urban area
 - Distance from the farm
 - Type of farming and size
 - Is farming is the only or your main occupation?
- **Critical point!** Have you ever lost farming land due to urban expansion or activities?

Depending on the answer I continue in a (1) hypothetical level or in the (2) really case situation.

(1)

- Have you ever thought what would you do if you would lose farming land (make a back-up plan)? (testing awareness)
- How would you react if you would lose your farming land due to urban expansion? (actions)
- What are the reasons that lead you towards this specific decision?
- Why these reasons are important for you?
- Would you consider other options? (do nothing / expand elsewhere / change farming type / invest more the remaining farm / change occupation / search for opportunities within the urban expansion etc.)
- How would you spend or invest the compensation amount?
- What will be the consequences of your decision?
- Will your decision eventually effect your working labor? (If yes, how?)
- Will your decision eventually effect the resources you spend on farming? (If yes, how?)
- Will your decision eventually effect the technology you are currently using? (If yes, how?)

- Does the ownership of the land play a role in your decision? (If yes, how?)
- How sure and confident do you think you would be from your decision?

(2)

- How much land was taken away from your possession? (%)
- What was your reaction when you lost your farming land due to the urban expansion? (actions)
- What were the reasons that lead you towards that specific decision?
- Why these reasons were important for you?
- Did you considered other options? (do nothing / expand elsewhere / change farming type / invest more the remaining farm / change occupation / search for opportunities within the urban expansion etc.)
- What did you do with the compensation amount?
- What were the consequences of your decision?
- Did your decision eventually effected your working labor? (If yes, how?)
- Did your decision eventually effect the resources you spent on farming? (If yes, how?)
- Did your decision eventually effect the technology you are were using? (If yes, how?)
- Did the ownership of the land played a role in your decision? (If yes, how?)
- How sure and confident were you from your decision?