

An analysis of grain producers' labour cost: The case of South Africa versus Mozambique

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REMARKS

The reader is reminded of the following:

- This dissertation is presented in article format and in accordance with the policies of the North-West University's Faculty of Economic and Management Sciences' WorkWell Research Unit and consists of two research articles.
- Article 1 was submitted to the *Agrekon*, when printed, we were still awaiting feedback (see attached proof of submission at back).
- Article 2 was submitted and accepted into the *Journal of Applied Business Research* of the Clute Institute, a Department of Education approved peer-reviewed journal (refer Appendix 1). The article was formatted according to the journal's author guidelines (refer Appendix 2)

ABSTRACT

Title: An analysis of grain producers' labour cost: The case of South Africa vs. Mozambique

Keywords: Agriculture, Employment, Grain market, Labour, Labour productivity, Labour strikes, Mechanisation, Minimum wages, Mozambique, Production cost, South Africa.

The South African agricultural sector is of great economic importance; not only does it contribute to Gross Domestic Product (GDP), it is also a significant provider of employment. On average, a South African producer feeds approximately 1 600 people compared to the average in Africa of only 26 people and, therefore, the South African agricultural sector is key in providing food security in South Africa. Over the last number of years, South African producers have experienced mounting pressure when it comes to producing profitably. A recent announcement of a 51% increase in agricultural minimum wages resulted in retrenchments by producers in an attempt to reduce production costs.

Furthermore, rising production costs, including the cost of labour, have left producers considering alternatives such as mechanisation and/or diversifying into other sectors. Other more drastic measures include relocating or diversifying agricultural activities to other African countries in search of more profitable investments and other benefits such as affordable labour. However, when considering relocating, the cost of labour in the host country will be a determining factor. The main objective of this study was to determine the financial viability of producing in South Africa compared to Mozambique focusing on labour cost. In-depth, structured interviews with experts in this study field were conducted in order to determine the stability of the labour market in South Africa and Mozambique and also to examine the possibility of a link between higher wages and the level of development or mechanisation in the grain sector.

The findings include that cheap labour is available in Mozambique and can possibly add value to the grain-producing value chain cycle. However, other factors including the lack of a properly developed market and insufficient infrastructure may counter the possible cost advantages that could be gained through cheaper labour costs. A decision matrix was developed for grain producers as decision-making tool when considering relocating or diversifying agricultural activities to another African country.

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CHAPTER 1

1 INTRODUCTION

1.1 BACKGROUND

South Africa's agricultural sector represented 2.6% of the National Gross Domestic Product (GDP) in 2012, compared to the 1.9% in 2011 (DAFF, 2012:7). Over the last few years, the role agriculture plays in economic development has been given prominence with agricultural growth regarded as one of the key aspects of the governments' growth initiative for South Africa. The government is also searching for ways to create job opportunities through agriculture (Meyer, 2012). However, due to political interference in the agricultural sector, South African producers have considered relocating or diversifying to other African countries such as Mozambique, the Democratic Republic of the Congo (DRC), Georgia, Angola, Zambia, Malawi, Botswana, Kenya and Namibia (Hall, 2012; Reuters, 2010a).

African countries such as Mozambique are using the political instability in South Africa to their advantage by entering into contracts with the South African government as well as AgriSA to assist producers who are considering relocating or diversifying. AgriSA is an African institution that strives to promote development, profitability, stability and sustainability of commercial agriculture in South Africa on both national and international policy level (AgriSA, 2013). Mozambique and Zambia are encouraging producers to relocate and invest in their country's agriculture by creating favourable tax benefits. For example, Zambia offered to renounce import duties and value added tax mainly to attract South African producers (Reuters, 2010a).

AgriSaMoz is an initiative and agreement undertaken between AgriSA and the government of Mozambique and was successfully inaugurated on 26 May 2011. This initiative will help co-ordinate and regulate the activities and process in relocating or diversifying producers' agricultural business to Mozambique (Anon, 2011). Since this new trend of producers relocating has commenced, there has been a number of success stories (Anon, 2011). However, to relocate or diversify

to another country poses a number of risks of which each will require thorough consideration and planning. Challenges include political instability, transportation, underdeveloped infrastructure, labour cost, exchange rates and climate change (Kriel, 2012; Deloitte, 2011).

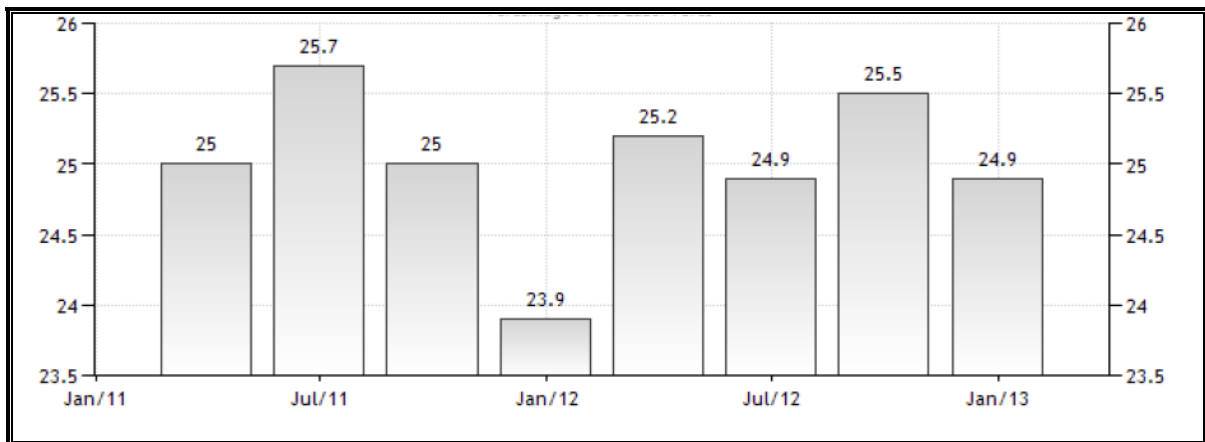
Research has indicated that the reasons for South African producers (mostly white producers) leaving South Africa include dramatic changes in South Africa's economic and political environment (Hall, 2012), but also sharp increases in production costs, such as diesel, fertiliser and electricity (Vink & Hall, 2010). Furthermore, the introduction of minimum wages for different sectorial determinations including farm workers, domestic workers, taxi operators, security workers and hospital workers since the early 2000s, has increased production costs (DPRU, 2008). The Restitution of Land Rights, Act 22 of 1994 that deals with land claims and giving back land to previously disadvantaged black producers is also placing pressure on South African producers to consider relocating. *Farmer's Weekly* (2010) declared South Africa and Zimbabwe as the only two countries not safe to invest in because of land reform programmes.

Increasing production cost, including increased labour cost, and political interference in the agricultural industry are two of the main reasons for South African producers relocating or diversifying their business interests to other African countries.

1.1.1 Employment in South Africa's agricultural sector

South Africa has a history of high unemployment as is evident in Graph 1.1 (refer page 3). For the first quarter of 2013, the unemployment rate was as high as 24.9% (Trading Economics, 2013). With the aim of reducing this high unemployment rate, the Government has developed a programme, i.e. The National Development Plan – Vision 2030. This plan was developed with the vision of eliminating poverty and reducing inequality by 2030. A further aim is to reduce the unemployment rate from 27% to 6%, thereby implying that 11 million new jobs have to be created by 2030 (Meyer, 2012).

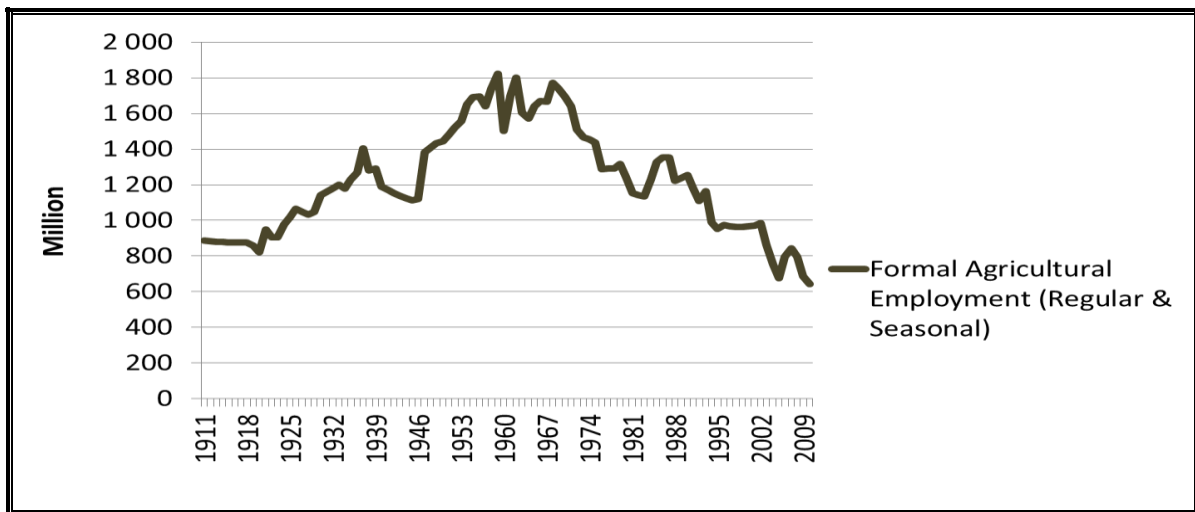
Graph 1.1: South African unemployment rate as a percentage of the total labour market



Source: Trading Economics (2013)

The agricultural sector is seen as one of the possible sectors for job creation. However, Graph 1.2 below indicates how this vision may be problematic when bearing in mind that over the past few years, employment in the South African commercial farming sector declined significantly. From 1988 to 1998, 140 000 jobs alone were lost in this sector, representing a decline of 20% (Simbi & Aliber, 2000).

Graph 1.2: Agricultural employment in South Africa: 1911-2010



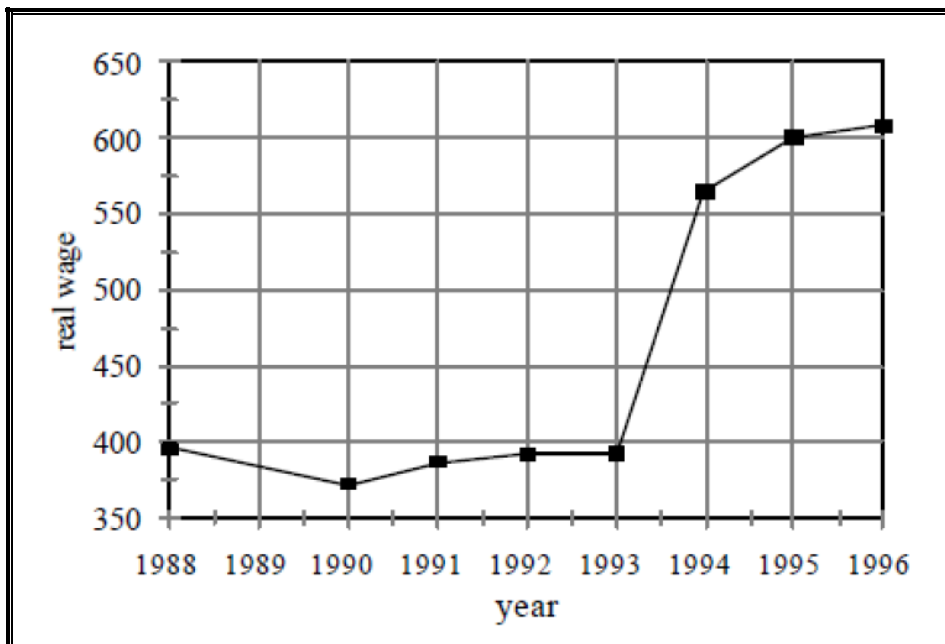
Source: Meyer (2012)

South Africa is plagued by labour crises, including labour strikes in several sectors. Mining workers, farm workers and public servants all go on strike, creating chaos while demanding higher wages. The result of these incidents is a negative image of the state of the South African labour market, both locally and internationally. The instability of the South African labour market may also contribute to producers exiting the country in search of not only land, but also a cheaper and more stable labour market or alternatively move towards increased mechanisation.

1.1.2 South African labour cost

Since the implementation of minimum wages in South Africa in 2000 (Anon, 2013a), labour-intensive farms found it more difficult to keep on being labour intensive and simultaneously paying competitive wages (Kirsten, 1999). As indicated in Graph 1.3, labour cost has increased significantly, with a sharp increase of over 50% right after South Africa's first democratic election in 1994.

Graph 1.3: Trends in real wage for farm workers: Rand per month



Source: Kirsten (1999)

A study conducted by Kirsten (1999) on the competitiveness of South African agriculture highlighted that an increase in wages creates a fear of jobs being lost. Approximately 12 years later, this theory is being proven correct with producers retrenching workers in reaction to the most recent minimum wage announcement of 51% effective from 1 March 2013 (Anon, 2013a).

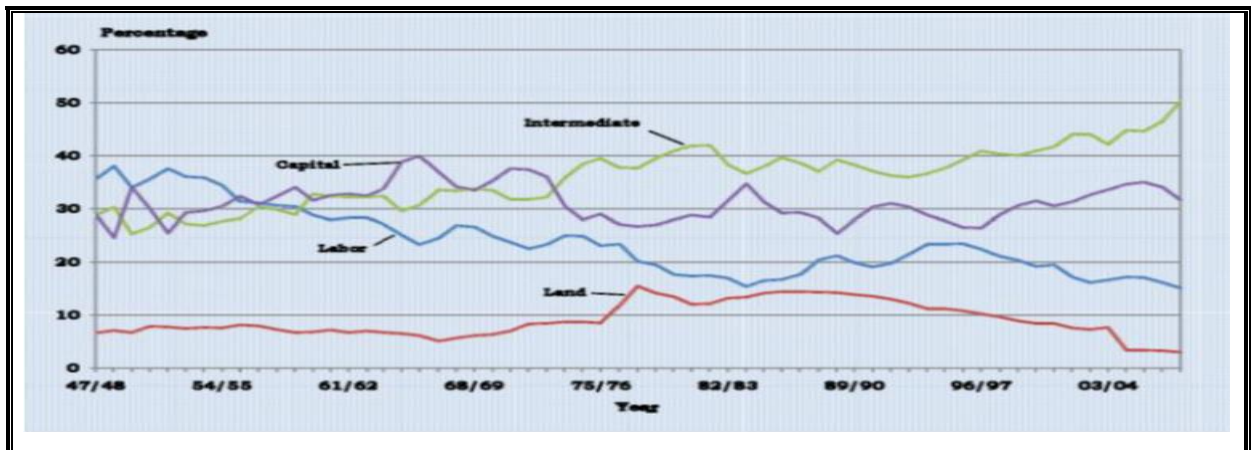
This 51% increase of the minimum wage from 2012 was announced by South Africa's Minister of Labour, Minister Oliphant, on 5 February 2013. One day after the announcement, on 6 February, at least 2 000 farm workers received retrenchment notices. AgriSA announced that 730 retrenchments were made in Limpopo alone (Anon, 2013a).

1.1.3 Moving towards mechanisation

Furthermore, the effect of minimum wages can also be extended to producers becoming less labour intensive by moving towards increased mechanisation. However, making this shift requires extensive capital investment and is therefore an important aspect for producers to keep in mind when deciding whether to remain in South Africa or relocate to other African countries.

According to Jim Rankin, secretary of the Agricultural Machinery Association, the machinery industry started blooming as a result of the increased minimum wages. He added that this was despite the area being cultivated declining (Anon, 2013b). This was reiterated by Johan van der Merwe, managing director of Northmec, when he said that “business is good”. Sales of farming implements increased from 3 200 to 7 800 units per annum from 2003 to 2012 (Anon, 2013b). Graph 1.4 below highlights that labour’s percentage of total input cost decreased over the past few years, which might be an indication that agriculture is becoming less labour intensive.

Graph 1.4: Percentage of land, labour, capital and intermediate costs: 1947-2008



Source: Liebenberg & Pardey (2010)

1.1.4 South African producers

With the South African agricultural sector facing a number of challenges, producers are reviewing their options, which include (Hall, 2012):

- i. Exit farming, sell their farms and seek employment in other sectors,
- ii. Diversify into non-agriculture sectors, or
- iii. Leave South Africa and relocate.

That South African producers are considering other alternatives is evident through the statistics that approximately 20 000 white commercial producers have left the sector from 1996 to 2007 (Hall, 2012). This trend poses a very serious threat to

food security in South Africa as a South African producer on average feeds nearly 1 600 people compared to the average in the rest of Africa of only 26 people (Coetsee, 2011). The importance of the agricultural sector in South Africa cannot therefore be overemphasised.

1.1.5 Mozambique as an alternative

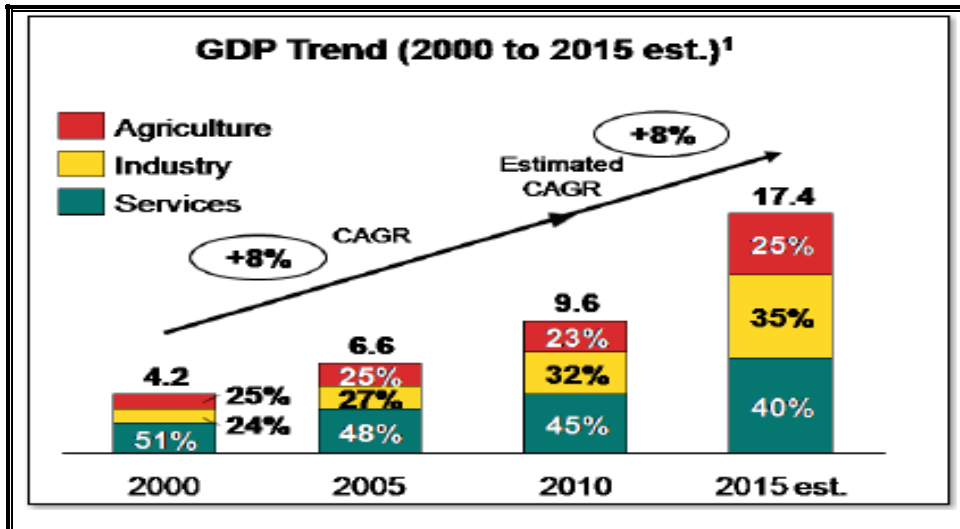
As mentioned before, Mozambique is one of the destinations chosen by South African producers to diversify or relocate to. Mozambique is rich in natural and other resources, such as labour, making it an attractive destination for South African producers.

Mozambique's Minister of Agriculture, José Condugua António Pacheco, highlighted in Maputo during June 2012 that the following factors contribute to providing Mozambique with a comparative advantage (Mavie, 2012):

- Agro-climatic conditions allowing a broad range of agriculture production,
- Advantageous geographical conditions,
- Political stability,
- Safety and security,
- Cheaper labour cost, and
- Infrastructure development.

Over the last few years, Mozambique has achieved an impressive growth rate of 9.9% in 2009 from 6.9% in 2005 (Mavie, 2012). In order to maintain this growth trend, Mozambique's government has focused on growing the agricultural sector by attracting South African producers. Approximately 800 South African producers have already relocated or diversified to Mozambique (Reuters, 2010b). Figure 1.1 shows the Mozambican sector's contribution to total GDP with an estimated contribution by agriculture in 2015 of 25% (Mavie, 2012).

Figure 1.1: Mozambique's GDP trend: 2000-2015



Source: Mavie (2012)

1.2 LITERATURE REVIEW

Previous studies have been performed that have focused mainly on foreign direct investment in MENA (Middle East and North African) countries (Nicet-Chenaf & Rougier, 2011). Other studies have been undertaken to determine the link between foreign direct investment and production levels (Dlamini & Fraser, 2010) and also labour trends in the agricultural sector of South Africa (Simbi & Aliber, 2000). In a study done by Kirsten (1999), he focused on the input side of agriculture and the effect on competitiveness. None of these studies have focused specifically on labour as input cost before investing in Mozambique's agricultural sector. An in-depth literature review will be performed later in the study (refer to Chapters 4 and 5, pages 67 and 88, respectively).

1.3 MOTIVATION OF TOPIC ACTUALITY

The recent increase in farm workers' minimum wage and the impact thereof on the agricultural sector have raised the question whether it is still financially viable for South African producers to remain in South Africa based on the cost of labour. The topic is very actual to both South African producers considering alternatives and agricultural policy-makers in the South African government.

1.4 PROBLEM STATEMENT

The agricultural sector of South Africa plays an important role in economic development, which includes job creation. However, the political and economic uncertainty in South Africa, including the recent implementation of a higher minimum wage for farm workers, has led to producers considering alternatives. These alternatives include diversifying or relocating to other African countries such as Mozambique and increased mechanisation to reduce the reliance on manual labour.

The following questions can therefore be raised:

- Is it financially more viable for South African producers to relocate or diversify to Mozambique based on the cost of agricultural labour?
- Furthermore, what effect does the increase in labour cost have on producers' total production cost and decision to increase mechanisation?

1.5 RESEARCH OBJECTIVES

The research objectives can be divided into main and secondary objectives.

1.5.1 Main objective

The main objective of this study is to determine whether it is still financially viable for grain producers to produce in South Africa based solely on labour considerations.

In order to achieve the main objective, the following secondary objectives will be addressed, namely to:

- determine and compare the minimum wages for farm workers in South Africa and Mozambique, respectively,
- analyse the stability of each country's labour market,
- determine whether higher wages lead to increased productivity in South Africa and Mozambique,

- determine the financial effect of increased labour cost on maize producers' production cost, in relation to increases in other input cost, and
- determine the possible link between higher labour cost and increased mechanisation.

1.6 RESEARCH DESIGN/METHOD

To achieve the above objectives, a thorough literature review with an empirical study will be conducted.

1.6.1 Literature review

The literature review will consist of reviewing previous academic research performed relevant to the topic. Relevant journal articles, secular magazine articles, newspaper articles, conference reports, theses and dissertations will be reviewed. Key statistical indicators will also be examined for both South Africa and Mozambique, including agriculture's contribution to GDP, the unemployment rate, and productivity per farm worker.

The literature review aims to:

- Provide producers considering relocating or diversifying to Mozambique with detailed information about the state of labour in both countries and the cost thereof.
- Provide a sound foundation for the empirical part of this study.
- To serve as a basis to develop questionnaires used during interviews that will be undertaken as part of the empirical study.

1.6.2 Empirical research

The empirical research will consist of two phases, namely qualitative and quantitative research. The first phase of the research will be conducted using semi-structured interviews as measuring instrument. Interviews will be conducted with key players in this process of relocating to Mozambique. The identified key players include:

- Ms Elize van der Westhuizen: Head of labour relations at AgriSA.
- Dr Ferdi Meyer: Head of the Bureau for Food and Agricultural Policy.
- Mr Johan Pienaar: Deputy executive director of AgriSA and deputy chairman of the African committee

The second phase of the research will utilise quantitative techniques. Labour cost as part of variable maize production cost will be analysed in order to reach the set research objectives.

The research articles that form part of this dissertation will be structured based on these two phases. Article one of this study will include the findings of the qualitative study, i.e. the results of the interviews, while, on the other hand, article two will be quantitative of nature.

1.7 OVERVIEW

This study is structured into six chapters as follows:

Chapter 1: Introduction

This chapter will provide background to the study and includes an introduction to the topic, the problem statement and the research objectives. Furthermore, an introduction to the research methodology followed.

Chapter 2: Research methodology

Chapter 2 will provide the research methodology and design followed in this chapter, including a description of the researcher's research paradigm.

Chapter 3: South Africa versus Mozambique

This chapter will present the different characteristics of South Africa's and Mozambique's agricultural sectors, labour markets and labour costs, the quality of South Africa's and Mozambique's farm workers and economic and political influences.

Chapter 4 (Research article): An analysis of grain producers' labour cost: The case of South Africa versus Mozambique

This chapter is presented in the form of a research article that considers whether a cost advantage, based on the cost of labour, can be gained through relocating or diversifying agricultural activities to Mozambique.

Chapter 5 (Research article): The effect of higher wages on production cost and mechanisation: A South African maize sector study

This chapter is presented as the second research article of this dissertation. The purpose of this article is to investigate the effect that higher wages will have on the South African maize sector. Furthermore, to determine whether there is a relationship between higher labour cost and increased mechanisation in the maize sector.

Chapter 6: Summary, conclusions and recommendations

Chapter 6 will provide a summary to the study. The main conclusions reached and resultant recommendations made will be presented. The areas for further research will be identified.

CHAPTER 2

2. RESEARCH METHODOLOGY

2.1 INTRODUCTION

Before a researcher can embark on a research study, a clear understanding of the research methodology and design is required. These concepts mainly refer to the researchers' plan of action in order to conduct and complete the study. The main focus of this study will be to develop a plan of action to be followed in order to gain the necessary information to address the research problem. The research design, research methodology and research paradigm will be discussed, followed by a description of the types of research. Next the measuring instruments used in the study will be presented and the chapter will conclude with a discussion of the reliability and validity of the measuring instruments.

The main objective of this research study, as set in Chapter 1 (refer page 9), is to determine whether it is still financially viable for grain producers to produce in South Africa based solely on labour considerations. The research approach to be followed will be chosen to address this research objective.

Research is often seen as an intensive search for new knowledge, the "movement from the known to the unknown" (Kothari, 2009:1; Rajendra Kumar, 2008:1). Research must contribute something new to existing data or knowledge (Rajendra Kumar, 2008:2). However, in order to gain new knowledge, one has to plan, organise and find relevant ways to collect information. This can be seen as a dualistic process that consists of research design and research methodology. Therefore, a distinction should be drawn between the concepts of research design and research methodology (Kothari, 2009:7).

2.1.1 Research design and research methodology

Research design can be seen as a plan or framework of how the research will be conducted in order to answer the initial problem statement (Babbie & Mouton, 2001:55). This plan will also indicate the techniques and methods used to collect and analyse information or data (Kothari, 2009:7).

On the other hand, research methodology is regarded as a plan to systematically solve or find answers to the research question (Kothari, 2009:8; Rajendra Kumar, 2008:5; Graziano & Raulin, 2010:2). However, research methodology encompasses more than only knowing which methods to use. The researcher has to understand which methods are relevant or not, how to analyse what they mean and also the logic behind each of them (Kothari, 2009:8). Research methodology is much wider than research design, as research design can be seen as a part of research methodology (Rajendra Kumar, 2008:5).

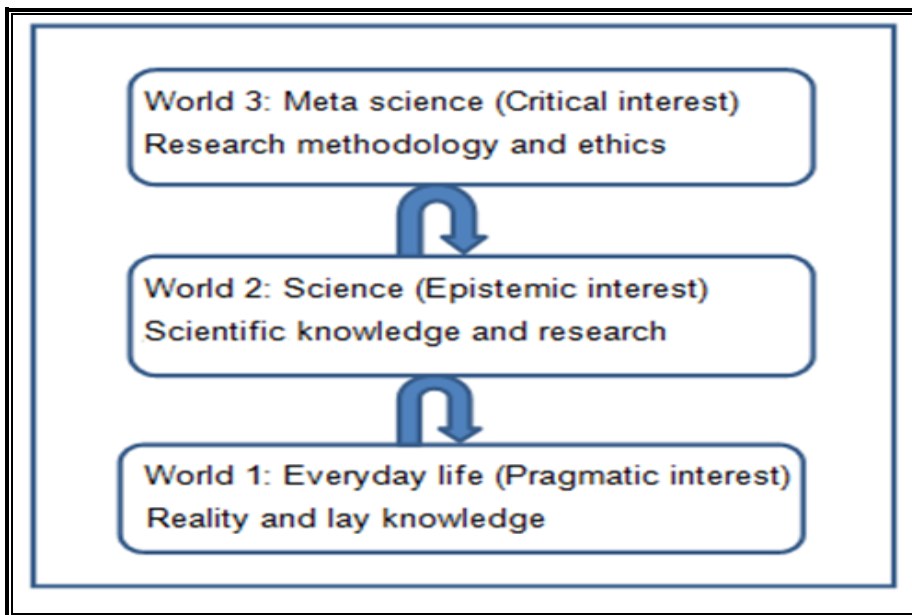
According to Babbie and Mouton (2001:75), research methodology focuses on the process, methods and techniques used in the research process, while Leedy and Ormrod (2005:12) and Kothari (2009:8) defined research methodology as the various general steps followed by researchers while conducting their research.

It can therefore be concluded that research design can be defined as the chosen plan of action that will be followed in order to meet the objectives and answer the research problem, while research methodology can be defined as using relevant measuring techniques in the process of answering the proposed research question.

2.1.2 Research paradigms

According to the Business Dictionary (2013), a paradigm can be defined as a set of viewpoints or assumptions accepted by a group of people or individuals. Research usually aims to solve realistic problems in order to make a contribution to society (Mouton, 2009:139). Every research topic or problem is unique and different, and therefore every research topic's methodology will be specifically designed according to the research study's needs. A simple structure, the "Three Worlds Framework", can be utilised to illustrate the methodological differences between different research approaches within social sciences (Mouton, 2009:139). Every research topic can be categorised according to these "Three Worlds" (refer to Figure 2.1).

Figure 2.1: The basic framework of the Three Worlds



Source: Mouton (2009:139)

World 1: Everyday life and lay knowledge

This is the ordinary world in which people live in every day. Lay knowledge refers to knowledge acquired to help us cope with everyday life. This knowledge is gathered from learning, experience and self-reflection (Mouton, 2009:138).

World 2: Science and scientific research

The main goal of science lies in the search for truth rather than lay knowledge. In this world, researchers extract a phenomenon from World 1 and convert it into a topic of enquiry (Mouton, 2009:138).

World 3: Meta science

In this world, researchers will reflect on completed work performed. A critical review of their own research will be conducted in order to attain the truth about a matter (Mouton, 2009:138).

This study will be categorised in Worlds 1 and 2, for it takes an everyday issue and tries to find and explain the factors behind the phenomena.

2.2 TYPES OF RESEARCH

Every research study can be categorised into different types depending on the main objectives to be addressed. Every research type will influence the process and techniques used in order to gain relevant data and answer the research question. Therefore, research design and research methodology will vary according to the research categorisation. Different types of research will now be discussed and also which types are relevant to this study.

2.2.1 Descriptive vs. analytical

Descriptive research describes affairs as they currently exist and is often used in business and social sciences studies. The term *Ex post facto research* is often used to describe descriptive studies. This term implies that the researcher can only report on past events or what is happening, while having no control over the variables (Kothari, 2004:3). Descriptive research often makes use of surveys and fact-finding enquiries.

On the other hand, analytical research refers to the researcher using existing data and making a critical evaluation thereof (Kothari, 2004:3).

This research study can be categorised as descriptive research as the research aims to explain the effect higher wages has on the financial viability of South African producers while having no control over variables.

2.2.2 Applied vs. fundamental research

Applied research, also referred to as action research, attempts to find a solution to an immediate problem or to suggest changes to address the problem. The research will mostly focus on a specific case without making generalisations. Fundamental research, however, aims to explain something that is happening, in order to develop a theory. Generalisations are often made in fundamental research (Kothari, 2009:3; Rajendra Kumar, 2008: 7).

This research study will be categorised as fundamental research as the aim is to determine whether labour cost is a deciding factor in diversifying or relocating to other African countries such as Mozambique.

2.2.3 Qualitative vs. quantitative research

Quantitative research is used in areas where measurements can be taken (Rajendra Kumar, 2008:8). Qualitative research, on the other hand, is concerned with areas where the aim is to determine quality (Rajendra Kumar, 2008:8). Qualitative research is conducted by observing human behaviour in a natural environment (Smith, 2011:59)

Both quantitative and qualitative research methods will be followed in this study.

2.3 MEASURING INSTRUMENTS

In order to meet the research objectives set in Chapter 1 (refer to page 9), semi-structured interviews making use of a questionnaire will be used as measuring instrument. Interviews will be held with the following respondents: i) Elize van der Westhuizen: Head of labour relations at AgriSA, iii) Dr Ferdi Meyer: Head of the Bureau for Food and Agricultural Policy, and iii) Johan Pienaar: Deputy executive director of AgriSA and deputy chairman of the African committee.

The questionnaire as a measuring instrument will be discussed very briefly as an interview has the same goal and purpose as questionnaires. An interview is nothing more than a questionnaire where information is obtained by personally asking the questions (Moore, 1983:24).

2.3.1 Questionnaire

A questionnaire is a measuring instrument used to gather empirical data. The following regarding questionnaires will now be discussed: i) Objective of a questionnaire, ii) types of questionnaires, and the iii) advantages and disadvantages of questionnaires.

2.3.1.1 Objective of a questionnaire

Invented by Sir Francis Galton in the 19th century, questionnaires are one of the most used measuring instruments in research (Moore, 1983:15). Questionnaires are used to obtain information about specific topics or issues and the views different people have about these topics/issues. They are used because of their flexibility and can be used to gather information on almost any topic. Small numbers of people as well as large groups can be used as populations (Moore, 1983:15).

2.3.1.2 Types of questionnaires

The first type of questionnaire and also the most common is those with closed questions (closed format). The respondent will answer the question asked by choosing one of the provided alternatives. This makes the data analysis much easier (Moore, 1983:15).

The other main type of questionnaire utilises open-ended questions (open format). The respondent will answer the questions in his or her own words and this leads to a better understanding of the respondents' views and perspectives on the topic (Moore, 1983:17).

A questionnaire with open-ended questions in the form of a personal interview will be utilised to conduct the study, as it provides a more detailed insight into the personal views of the respondents.

2.3.1.3 Advantages and disadvantages of open-ended questionnaires

The main advantages of open-ended questions are (Moore, 1983:18):

- A wider variety of answers will be received,
- A personal insight into the respondents' views on a topic will be gained, and
- It is an inexpensive and flexible way to gather data.

On the other hand, the main disadvantages of open-ended questions are that (Machika, 2013; Moore, 1983:17-18):

- It is time consuming to analyse the data,
- It is difficult to analyse the data, and
- Respondents may not answer because of more effort needed.

A discussion of the interview as measuring instrument will now follow.

2.3.2 The interview

An interview allows the interviewer to obtain the interviewees' own interpretation on a subject or series of events (Rubin & Rubin, 2005:36). Furthermore, an interview has the same goal and purpose as questionnaires, as an interview is nothing more than a questionnaire where information is obtained by personally asking the questions (Moore, 1983:24). The aim of the interview is not to be a comparative study between the views of the respondents, but rather to investigate and report on the new knowledge obtained.

Different types of interviews include: i) structured interviews, ii) semi-structured interviews, and iii) in-depth interviews. In-depth interviews, where a relatively small number of people will be interviewed, often include more of a detailed discussion of the topic in order to gain information (Moore, 1983:25).

In-depth interviews will be conducted with the key players mentioned previously. Furthermore, open-format questions will be raised during the interviews. This allows the interviewee to formulate his/her answers in his/her own words. This will provide the interviewer with more personal insight and can also lead to unplanned follow-up questions being answered (Yin, 2003:90).

2.3.2.1 Advantages and disadvantages of interviews

The advantages of an interview include that more qualified answers can be obtained, it is more personal than questionnaires, it will provide a better response rate, and the researcher has more control over the interview (Moore 1983:27).

On the other hand, the main disadvantage of an interview is that the information obtained may be difficult to analyse (Moore, 1983:28).

2.3.2.2 General guidelines for an interview

The following general guidelines are suggested when formulating and asking questions (Rubin & Rubin, 2005:108-121; Babbie, 2004:246-249):

- The interviewer should avoid imposing his/her views on the interviewee.
- Maintain continuity by not jumping from one topic to another. The questions should flow in an orderly manner.
- Ask clear, well-formulated questions in order to avoid misunderstandings.
- Ask only relevant questions.
- Avoid asking leading questions.

Furthermore, the following are general guidelines to conduct a productive interview (Turner, 2010:757; Leedy & Ormrod, 2005:147; Rubin & Rubin, 2005:108-121):

- Identify and list some questions in advance in order to start the interview.
- Choose a suitable location for the interview to avoid distractions.
- Introduce yourself and the topic: Start the conversation with casual conversation until both are relaxed and comfortable.
- Explain the confidentiality policy and ask permission to record the interview.
- Start by asking easy, short questions.
- Ask the longer, more in-depth questions later.
- Do not interrupt the interviewee; listen carefully to his/her answers.
- Close the interview by thanking the interviewee for his/her time and willingness to talk to you.
- Be neutral towards the interviewees' answers by keeping your reactions to yourself.

2.3.2.3 Limitations of interviews

An important aspect to keep in mind when using interviews as measuring instrument in research is that both the interviewer and interviewee are human, with feelings, ideas and experiences (Rubin & Rubin, 2005:30). This does have an impact on the results and analysis process.

2.3.2.4 Population/sampling

In order to make your research data collected from interviews more credible, one has to ensure that the interview sample has 'first-hand knowledge' of the topic. Interviewees should have experience in the field of interest (Rubin & Rubin, 2005:64).

In this research study, the interview sample is experienced and knowledgeable in this area of research. It is important to select people to participate and to ensure that all of them are objective, so that no biased behaviour can influence the results.

2.3.2.5 Administration of the interview process

The following steps were taken in order to plan and conduct the interview:

- All of the interviewees were contacted and the research topic was explained. An appointment was scheduled with each interviewee.
- The appointment was confirmed by the parties involved and a location was decided on.
- A questionnaire was developed by the researcher based on the interviewees' involvement in the process of South African producers relocating to Mozambique or their knowledge of the current conditions in the labour and agricultural sector of South Africa.

2.3.2.6 Analysing data

All data obtained during the interviews (both recorded and notes taken during interview) were written down. Similar questions asked to the interviewees' were compared to identify any similar views or opinions on topics. All information obtained during the interviews was categorised based on the objectives stated in Chapter 1 (refer to page 9).

A copy of the documented interview and conclusions made was emailed to the interviewees to confirm that it is an accurate and correct representation of the conducted interview.

2.4 VALIDITY AND RELIABILITY

Validity and reliability should not be seen as the same concept. The reliability of measures ensures consistent results no matter who performs the measure (Graziano & Raulin, 2010:78). On the other hand, reliability refers to measuring techniques applied repeatedly on the same object, and giving consistent results each time (Babbie, 2004:141).

Reliability can be tested by answering the following questions (Kothari, 2009:111):

- Who was responsible for collecting the data?
- What sources were used for data collection?
- Were proper measuring techniques used for data collection?
- Was the researcher objective?

Validity refers to what extent the measuring instruments tests what was intended to be tested or measured (Kothari, 2009:73). Three types of validity can be distinguished (Kothari, 2009:74), namely:

- *Content validity*: Refers to the extent the measuring technique accurately covers the topic of research.
- *Criterion-related validity*: Refers to how successfully the specific measuring technique can be used for empirical testing. The criterion must be both objective and relevant.
- *Construct validity*: Refers to how successfully correlations can be predicted.

Attention was paid to reliability and validity while conducting the interviews to ensure maximum reliability. The above stated criteria were met in the empirical study and therefore it can be concluded that the measuring techniques followed are valid and will produce accurate results.

2.5 SUMMARY

This chapter discussed the research methodology followed to address the research problem and to achieve the research objectives set in Chapter 1. Firstly, a distinction between research design and research methodology was drawn,

followed by a discussion of the Three Worlds framework and a consideration of this study's paradigm. The measuring instruments to be used in this study were discussed in detail. The chapter concluded by defining validity and reliability and how it will be ensured in this study.

Chapter 3 will provide a literature review of South Africa and Mozambique's agricultural sector and labour market.

CHAPTER 3

3 SOUTH AFRICA vs. MOZAMBIQUE

3.1 INTRODUCTION

The main purpose of this chapter is to address the following secondary objectives set in Chapter 1 (refer page 9), namely to determine the minimum wage for farm workers in South Africa and Mozambique respectively, and to analyse the stability of the labour market and the financial implication thereof. The researcher will review different elements relevant to this study, which include the agricultural sector and its economic importance, the grain industry, the labour market's stability, the compilation of the labour market, agriculture's contribution to employment, political influences on the agricultural sector, and rising labour cost and the effect thereof. The value chain of the grain sector will also be scrutinised. This will be conducted for both South Africa and Mozambique to determine any competitive advantages. However, firstly Africa as continent will be contextualised.

3.2 AFRICA

Africa has some of the largest quantities available arable land worldwide, with an astonishing 46% available arable land (Deloitte, 2011; Genis, 2010). A number of agricultural opportunities can therefore be exploited if identified and managed correctly. However, the validity of opportunities will have to be determined before investing (Deloitte, 2011). Africa can be used for agricultural growth because of its abundance in natural resources. Furthermore, the following factors can contribute to producers considering to relocate or diversify to other African countries: i) low levels of agricultural production, ii) large proportions of available agricultural land, iii) rich water and other resources, iv) relatively low labour cost (may vary in different regions in Africa), v) government assistance for investing in agriculture (depends on government policy), and vi) a dependence on local agricultural production (Deloitte, 2011). Foreign direct investment (FDI) into Africa reached an astonishing US\$87.6 billion in 2008, representing an increase of 27% since 2007 (Anseeuw & Ducastel, 2012). This reflects the renewed global interest in Africa.

However, relocating or diversifying into African agriculture will pose a number of risks, each of which will need to be considered and managed properly. The following risks were identified in a report by Deloitte (2011):

- *Country risk*: This refers to the political and economic environment including government policy and statutory regulations.
- *Industry risk*: This indicates to what extent the specific industry is developed.
- *Legal considerations*: Meeting requirements such as tax payments.
- *Climate changes*: Will the climate and soil quality be suitable for the proposed production and also the availability of water?
- *Access to sufficient markets*: A detailed market analysis will need to be performed beforehand.

Previous research conducted by Hall (2011 & 2012) focused on the trend of South African producers relocating or diversifying to other African countries and investing in their agricultural sectors. The main focus in the study conducted by Hall (2012) was the agreement between AgriSA, the DRC (Brazzaville) and two South African sugar giants who acquired African subsidiaries to compensate for the decline in South African production.

3.3 SOUTH AFRICA

Cultivated land in South Africa amounts to 12.76 million hectares, of which 82% are used for commercial agricultural activities. The agricultural sector of South Africa utilises 80% of total land in South Africa, but a mere 12% is arable. The agricultural sector of South Africa is one the most important sectors to ensure economic development and growth (AgriSETA, 2010).

3.3.1 South African agricultural sector and its economic importance

The agricultural sector of South Africa is of great economic importance; not only does it contribute to total GDP, it is also seen as a key provider of employment, and an earner of foreign exchange (Greyling, 2012; Roberts & Antrobus, 2011; Lestrada-Jefferis, 2000). The sector also influences the economic importance of other sectors because of its integrated nature and can be viewed as a primary

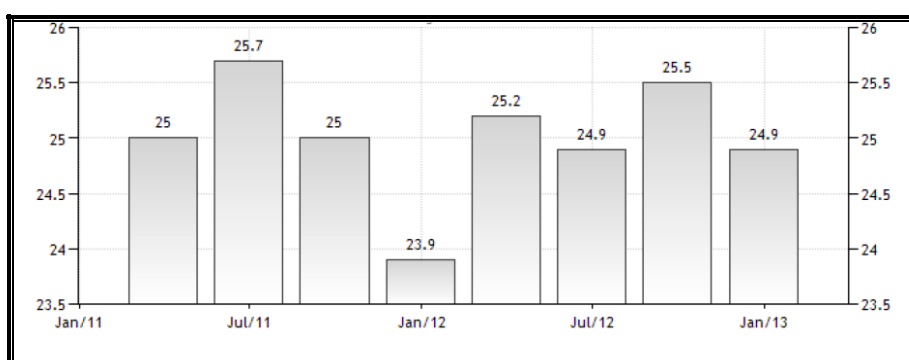
supplier to these sectors (Meyer *et al.*, 2009:2). South Africa’s agricultural sector represented 2.6% of the GDP in 2012, compared to the 1.9% in 2011 (DAFF, 2012:7). These are compared to the 7.1% agriculture represented in 1970. Therefore, it is evident that the agricultural sector has declined in its total contribution to GDP.

A South African producer feeds an average of approximately 1 600 people compared to the average in Africa of only 26 people (Coetsee, 2011). This further highlights the importance of the agricultural sector in South Africa. Furthermore, South Africa is in the process of recovering from the food crisis that started in 2008 and food inflation is still under pressure.

3.3.2 Agriculture as part of South Africa’s total labour market

South Africa is a country that has undergone major transformations during the past two decades. After South Africa’s first democratic election in 1994, the already high unemployment rate declined even further to 24.9% for the first quarter of 2013 (Trading economics, 2013). Graph 3.1 below illustrates the declining unemployment rate of South Africa over the last two years.

Graph 3.1: South African unemployment rate as a percentage of the total labour market



Source: Trading Economics (2013)

In 1970, the commercial farming sector employed 30% of South Africa’s economically active population. However, in 2007, only 8.8% of South Africa’s economically active population was employed in this sector (Roberts & Antrobus,

2013). Since then, this figure has declined to a mere 4% today (Own calculation from data by StatsSA, 2013). One out of seven jobs is created by the agricultural sector in South Africa (Meyer *et al.*, 2009:6).

The following results were published by StatsSA (2013) in their annual South African labour force survey. The highlighted item in Table 3.1 indicates the total employment in the agricultural sector of South Africa. From 2012 to 2013, there has been an increase in total agricultural employment from 656 000 to 739 000.

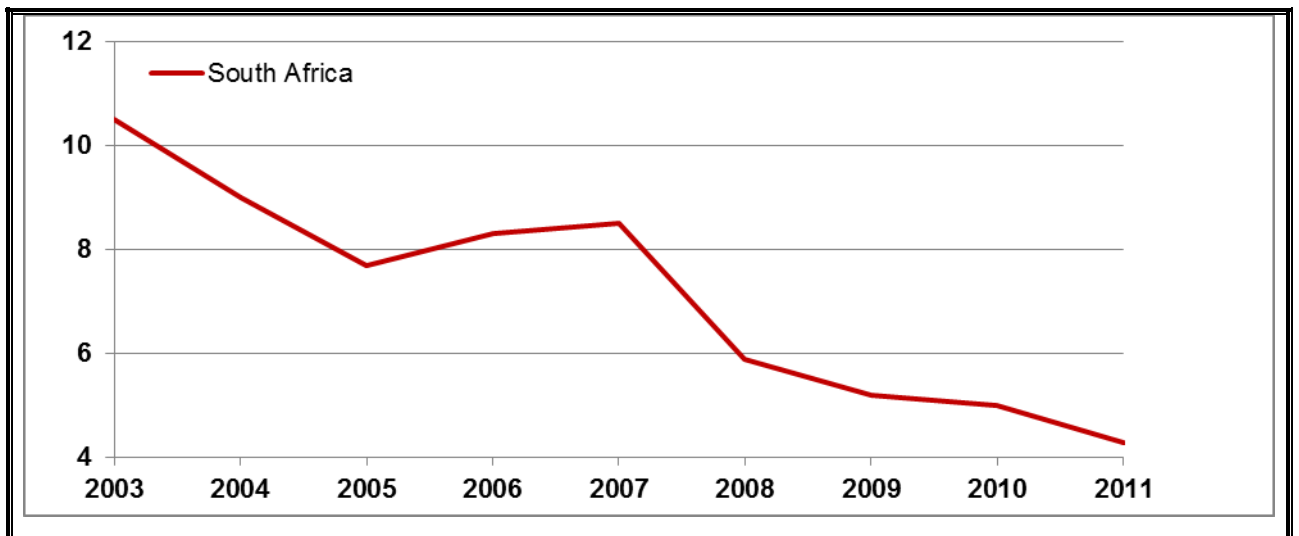
Table 3.1: Employed persons by sector in South Africa: 2012-2013

	Jan-Mar 2012	Oct-Dec 2012	Jan-Mar 2013	Qrt-to- Qrt change	Year-on- year change	Qrt-to- Qrt change	Year-on- year change
	Thousand				Per cent		
Population 15–64 yrs	32786	33128	33240	112	454	0,3	1,4
Labour force	17948	18078	18222	144	274	0,8	1,5
Employed	13422	13577	13621	44	199	0,3	1,5
Formal sector (non-agricultural)	9509	9611	9586	-25	77	-0,3	0,8
Informal sector (non-agricultural)	2106	2205	2192	-13	86	-0,6	4,1
Agriculture	656	685	739	54	83	7,9	12,7
Private households	1151	1076	1105	29	-46	2,7	-4,0
Unemployed	4526	4501	4601	100	75	2,2	1,7
Not economically active	14838	15050	15017	-33	179	-0,2	1,2
Discouraged work-seekers	2335	2257	2330	73	-5	3,2	-0,2
Other (not economically active)	12503	12794	12688	-106	185	-0,8	1,5
Rates (%)							
Unemployment rate	25,2	24,9	25,2	0,3	0,0		
Employed/population ratio (absorption)	40,9	41,0	41,0	0,0	0,1		
Labour force participation rate	54,7	54,6	54,8	0,2	0,1		

Source: StatsSA (2013)

Despite this increase from 2012, 140 000 jobs alone were lost in this sector from 1988 to 1998, representing a decline of 20% (Simbi & Aliber, 2000). Graph 3.2 below illustrates the number of people employed in the agricultural sector in South Africa from 2003 to 2012. Over this period of 10 years, agricultural employment declined significantly. This decline can be ascribed to a number of factors, such as i) government policy, ii) rising labour cost, and iii) improved technology (Hall, 2012; Vink & Hall, 2010). The above-mentioned factors will be discussed in detail later in the study.

Graph 3.2: Employment in the agricultural sector of South Africa: 2003-2012



Source: World Bank (2013a)

In an attempt to address this high unemployment rate, the South African government developed a “Growth Initiative – Vision 2030”. This plan aims to reduce poverty and inequality, and eliminate poverty by creating employment. The main purpose is to reduce the unemployment rate from 27 to 6% by 2030. In order to meet these goals, 11 million new jobs will have to be created by 2030. The agricultural sector of South Africa has been identified as one of the sectors in which these jobs need to be created, and the aim is that the agricultural sector must provide employment to 1 million people (Anon, 2013b; Anon, 2013c; Meyer, 2012).

This goal may be problematic when considering that, over the past few years, employment in the South African commercial farming sector declined significantly. To exacerbate this problem, approximately 800 producers have already left South Africa since the trend of relocating or diversifying to other African countries, further resulting in farm workers losing their jobs and income (Reuters, 2010b).

The above-mentioned discussion illustrates that agricultural activity is of great significance in order to ensure sustainable economic growth. It is also seen as being a key player in the process of reducing poverty through creating employment.

3.3.3 South African agricultural labour market composition

For years, the South African agricultural sector was characterised by the use of cheap unskilled labour. This trend is changing as it is becoming more attractive to employ fewer skilled workers than more unskilled workers, all as a result of increased minimum wages (Roberts & Antrobus, 2013; BFAP, 2012).

BFAP (2012) found a significant decrease (7.8 to 10.5% varying across provinces) in the demand for unskilled labour in the agricultural sector, while the demand for skilled labour remained unchanged. The decline in demand for unskilled labour is partly due to changes in the economy. Relative increases in the demand for skilled workers or increased mechanisation can result in the demand for agricultural labour declining to 28%. It should be noted that unskilled workers cannot be fully substituted, because not all industries are able to implement structural changes in order to move towards complete mechanisation to the same extent (Anon, 2013c; BFAP, 2012).

3.3.4 Productivity of farm workers in South Africa

Labour, *per se*, has a direct influence on effective production and on the value chain. Using value chain theories to gain a competitive advantage will be discussed later in this chapter. In this section, however, the productivity and output per farm worker in South Africa will be assessed. Data and results thereof will again be used later on in the study to conduct a value chain analysis for grain producers.

Developed countries tend to show higher growth rates in agriculture in comparison with less developed countries (Ramaila *et al.*, 2011). South Africa is seen as being more developed than Mozambique in terms of technology and infrastructure. In addition, labour productivity in South Africa is high when compared to other African countries (Ramaila *et al.*, 2011).

Labour productivity is a primary indicator of job creation. When determining labour productivity, it is measured by calculating 'output per worker'. In 2011, labour productivity in South Africa reached an ultimate low in 40 years with labour

productivity showing a negative growth of -1% (Sharp, 2011). Adcorp labour analyst, Loane Sharp, remarked that:

“This negative trend in labour productivity suggests that adding more workers does not necessarily translate into material increases in business output”.

According to Sharp (2011), producers will have a motive to pay workers more when increased wages will lead to greater productivity or output. Therefore, increased labour or the cost thereof must add value to the organisation. Meyer *et al.* (2009:6) stated that of all formal workers, 17.1% are employed in the South African agricultural sector, but produce a scarce 3.3% of total output.

Other research performed on the productivity of land and labour in the South African agricultural sector indicated that land and labour productivity peaked between 1947 and 1981, reaching a high of 4.17% and 4.91% for land and labour, respectively. After this peak, land and labour productivity declined to 1.46% and 2.67%, respectively, for land and labour productivity (Ramaila *et al.*, 2011).

Various factors have a direct or indirect impact on productivity, including: i) output and input, ii) land reform processes, iii) the total producers, and iv) new technology (Ramaila *et al.*, 2011).

3.3.5 Implementation of minimum wages in South Africa

Minimum wages were first implemented in South Africa in 2002, effective from 1 March 2003 (Roberts & Antrobus, 2013). Some of the main reasons for this implementation were to protect farm workers and to reduce poverty (Kassier *et al.*, 2003:7). Vink (2001:60) found that most farm workers were living in absolute poverty and therefore government intervention was needed to regulate the living and working conditions of farm workers (Kassier *et al.*, 2003:7).

Table 3.2 below summarises the current minimum wage for farm workers in South Africa, as announced by the Minister of Labour, Ms Mildred Oliphant, on 5 February 2013, effective from 1 March 2013:

Table 3.2: Minimum wages in South Africa: 1 March 2013 - 28 February 2014

Monthly	Weekly	Daily	Hourly
R2 274.82	R525.00	R105.00*	R11.66
		* 9-hour work day	

Source: Van der Westhuizen (2013a) (adapted)

3.3.6 Grain production in South Africa

The South African grain sector utilises 4.3 million hectares of available land in South Africa. Based on the size of the grain sector, it remains a significant provider of employment in South Africa (BFAP, 2012). Grain is classified as being a field crop. The grain-producing sector of South Africa is divided into different types of grain, with maize and wheat being the two largest contributors. The two main types of grain will be analysed in the next sub-section.

3.3.6.1 Maize

In South Africa, maize is classified as the most important grain crop, because it is a basic staple food consumed by many. White maize, representing 58% of total production, is mostly consumed by humans, while yellow maize is mainly used in the production of animal feed. In 2011, maize contributed 47.2% (R15 086 million) of total field crop production in South Africa (DAFF, 2011). There are approximately 9 000 commercial maize producers in South Africa and the maize market provides employment to 150 000 workers (DAFF, 2012b).

3.3.6.2 Wheat

Wheat is the second largest contributor to total field crop production in South Africa with a contribution of 9% (R3 850 million) of the total value (DAFF, 2011). In terms of wheat production, globally, South Africa is ranked 37th. It is estimated that there are approximately 3 800 to 4 000 wheat producers in South Africa. The wheat market provides employment to approximately 28 000 people in South Africa (DAFF, 2012c).

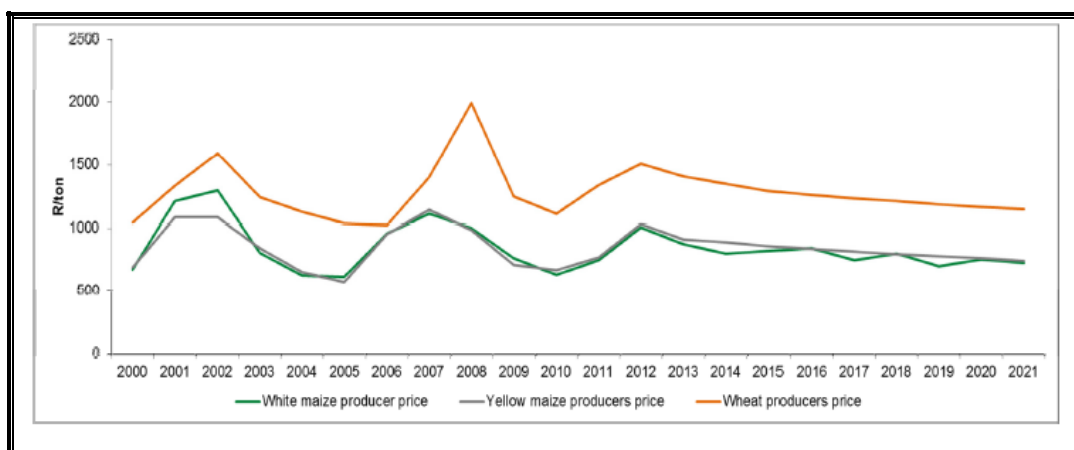
The cost structure of an average maize and wheat farm includes i) production cost, ii) labour cost, and iii) overhead cost (BFAP, 2012).

3.3.6.3 Impact of higher minimum wages on grain sector

One of the most important characteristics of the grain sector is its volatility; and after the national food crisis in 2008, the risk of the sector increased drastically (BFAP, 2012). Unstable markets, uncertain weather conditions, and the conversion of grain into biofuel have worsened the situation. Research conducted years before the current situation of significant increases in labour cost anticipated that an increase in labour cost will result in jobs being shed (Newman *et al.*, 1997:83), substituted with technology, or that unskilled workers will be replaced by a smaller number of skilled workers (Anon, 2013c; BFAP, 2012). If producers cannot cover operating expenses, and there are no more incentives or reward for taking a given risk, they will exit farming (BFAP, 2012; Hall, 2012).

In a model created by BFAP (2012), future prices of wheat and grain are expected to decline until 2021. Graph 3.3 below forecasts the real producer's price of grain and wheat, respectively.

Graph 3.3: Real producer price of maize and wheat: 2000-2021



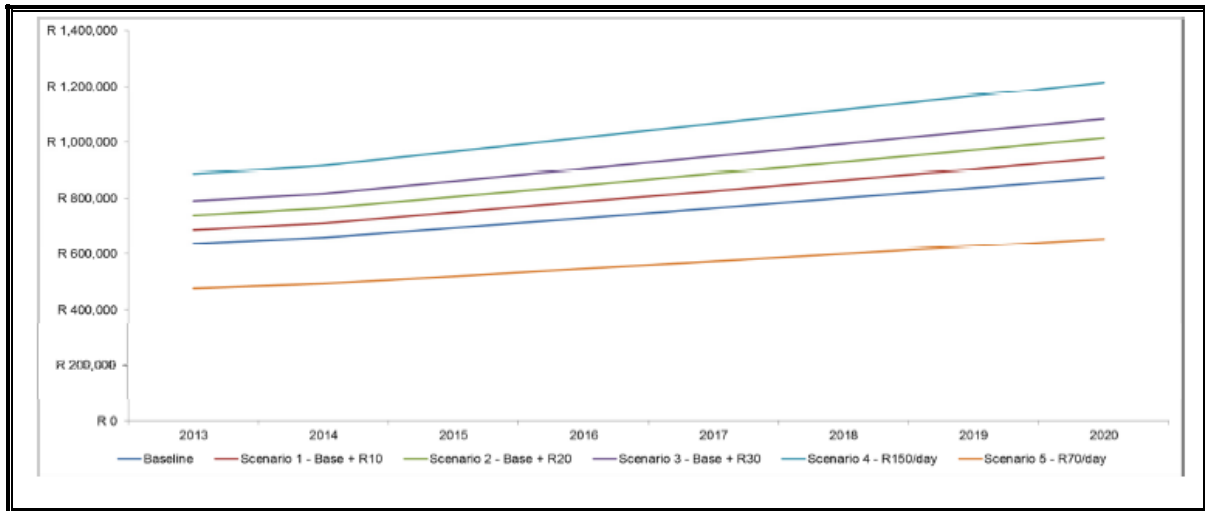
Source: BFAP (2012)

BFAP (2012) concluded that an increase in minimum wages of more than R20/day will result in producers not being able to cover operating expenses, leading to net farming income being negative. It can therefore be concluded that if real prices of

wheat and grain keep on declining, while input costs, such as labour, continue to increase, there will no longer be any incentive for producers to take risks, unless structural changes can be made to increase mechanisation (BFAP, 2012).

BFAP (2012) developed a model (The “FinSim” model) that evaluates the impact of the recent minimum wage announcement that, effective from 1 March 2013, producers will have to pay farm workers R105/day (Anon, 2013a). The model evaluated the effect of this wage announcement for the following sectors: i) apple and pear industry, ii) potato industry, and iii) the grain industry of South Africa. Different minimum wage scenarios were used in order to determine the effect of increased minimum wages for six different levels of fixed minimum wages, namely i) baseline (R84.90), ii) baseline + R10, iii) baseline + R20, iv) baseline + R40, v) minimum wage of R150 per day, this being the wage demanded by workers, and vi) R70 per day, being the current wage before the increase in 2013. The findings indicated that a typical grain-producing farm will spend R638 150 in 2013 on labour requirements in 2013 and at baseline + R10, and base + R20, total labour expenditure will amount to R689 028 and R 739 906, respectively. This represents an increase of 7.97% (R50 878) and 15.95% (R101 756). Under baseline + R30, total labour expenditure will amount to R790 640, representing an increase of 23.90% (R152 490). If workers’ demands are being met and a minimum wage of R150 per day is implemented, total labour expenditure will increase to R886 821. This is a 38.97% increase from the current position (BFAP, 2012; Own calculations). The above-mentioned results are shown graphically in Graph 3.4 below.

Graph 3.4: Labour expenditure under various scenarios



Source: BFAP (2012)

The following findings were made regarding the effect of minimum wages on the grain industry (BFAP, 2012):

- The total weight of labour in terms of production cost on an average grain farm represents 7.65% given current conditions.
- Increased minimum wages led to increased farm sizes, in order to spread overhead cost and minimise risk.
- A minimum wage of R150/day (as demanded by workers) will lead to a loss of R1.67 million per farm over a period of five years.
- Additional labour cost should be compared to the cost of acquiring farming implements and machinery, i.e. mechanisation.
- Some producers will not be able to cover operating expenses and will choose to exit farming.

BFAP (2012) calculated the shadow price of adding one additional unit of labour that producers are able to pay. Shadow price is the value of adding one additional unit of a specified scarce input (BFAP, 2012). If more is to be paid for an additional unit, net profit will decrease. The shadow price of one additional labour hour on a grain-producing farm was calculated at R8.31 per hour. For a 9-hour day, producers will be able to pay R74.77 for an additional farm worker. This is

R4.77 higher than the 2012 minimum wage. Therefore, the new minimum wage of R105 per day will lead to negative net income.

The research and results discussed above provide additional motivation for this research study. The current situation of producers, where incentives for accepting risks are becoming less attractive, results in producers exiting farming or considering relocating or diversifying to a destination where current knowledge and experience are rewarded.

3.3.7 Political influences on the South African agricultural sector

The impact of legislation on the agricultural sector has been thoroughly investigated in other studies such as the research performed by Roberts and Antrobus (2013). This study will not focus thereon; however, the statutory regulations impacting this study's final conclusions are listed below:

- Basic Conditions of Employment Act 75 of 1997.
- Minimum wage legislation introduced in 2002.
- Restitution of Land Rights Act 22 of 1994.

Most of the above-mentioned legislation was introduced because farm workers required protection from exploitation and to reduce poverty under farm workers, especially in the rural areas of South Africa (Roberts & Antrobus, 2013). Vink (2001:128) presented evidence that the agricultural sector could financially afford to pay minimum wages.

3.4 MECHANISATION AS ALTERNATIVE TO MANUAL LABOUR

Since the implementation of minimum labour wages in South Africa, producers have been searching for alternatives to reduce costs, such as substituting unskilled workers with fewer skilled workers (BFAP, 2012). Another substitute for manual labour as wages increase is the trend of becoming less labour intensive and moving toward increased mechanisation. Research conducted by Ramaila *et al.* (2011) indicated that technological improvement can lead to increased agricultural productivity. However, this is a very costly process. One has to

evaluate the increase in production cost as a result of increased minimum wages against the cost of restructuring your business process (BFAP, 2012).

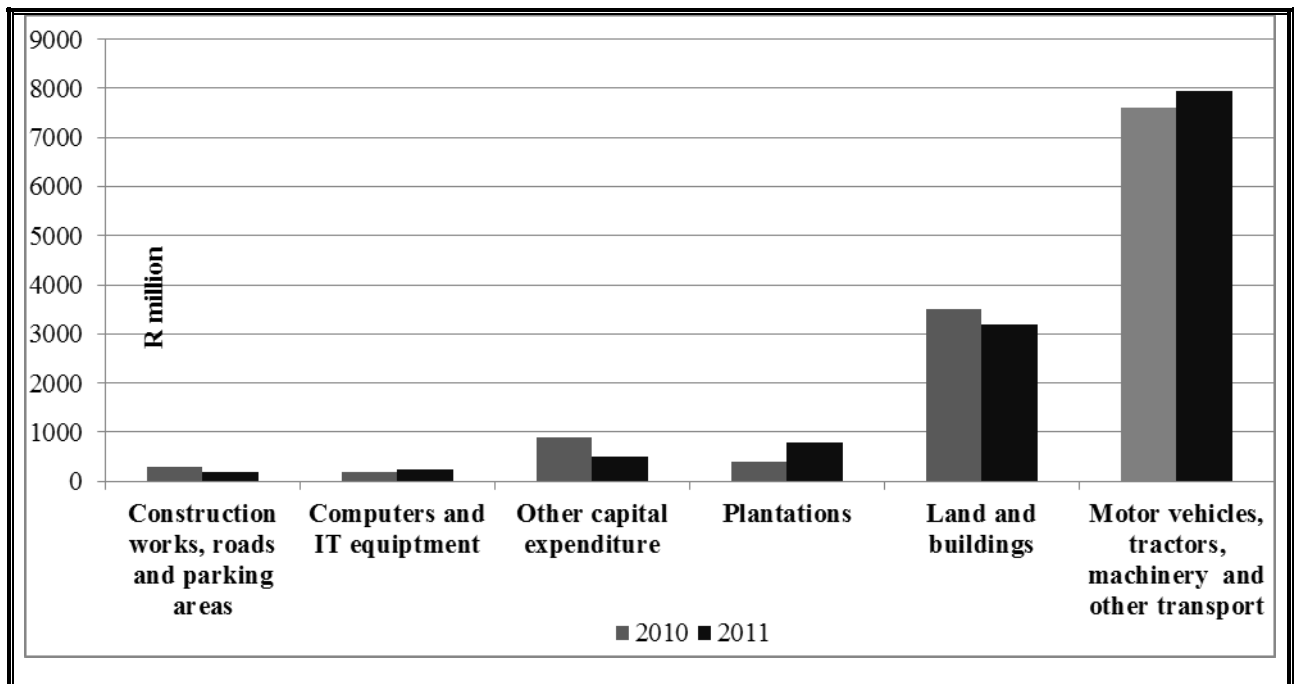
The BFAP (2012) report findings indicated that a minimum wage of R150 per day and the resultant increase in labour expenditure will be equivalent to each of the following implements that represent increased mechanisation over a period of eight years:

- A “1.5 x combined harvester with a three row snapper head (90-150kW)”,
or
- A “1.2 x 212 kW tractor”, or
- “2 x 100 kW tractors with 2 x 8 row planters”.

All of the above-mentioned implements or machinery will reduce the number of manual workers needed for production and harvesting (BFAP, 2012). However, some sectors are primarily dependant on manual labour, and therefore mechanisation is not an alternative (BFAP, 2012).

South Africa is still relatively labour intensive, but evidence of increased sales of machinery may indicate that South Africa is in the process of becoming less labour intensive. Some industries are more developed than others, mainly because of the availability of technology to replace manual labourers (BFAP, 2012). StatsSA (2011), in their annual agricultural survey report, stated that capital expenditure by commercial farmers increased with 1.86% from R11 559 million (2010) to R11 774 million (2011), respectively. The largest contributor was capital expenditure on motor vehicles, machinery and tractors. Capital expenditure by the commercial farming sector is illustrated in Graph 3.5 below.

Graph 3.5: Capital expenditure by commercial farming sector: 2010-2011



Source: StatsSA (2011) adapted

Since the new minimum wage for 2013 was announced, suppliers of farming implements and machinery commented that sales for the period from 2003 to 2012 increased from 3 200 to 7 800 units per annum sold (Anon, 2013b). This may indicate that producers are substituting manual workers for machinery. Another reason for this increase in the sales of mechanical implements can be contributed to the commodity price boom from 2007 to 2012. Commodity prices nearly doubled during this period, resulting in the net farming income of producers increasing significantly. Due to the availability of surplus funds, producers also invested more in capital goods (Meyer, 2013). There has been a renewed interest in the trend of mechanisation to such an extent that the theme for this year's annual 2013 NAMPO expo was "Technology for sustainable production", with suppliers offered the opportunity to demonstrate the advantages (including cost advantages) that their implements can provide. NAMPO is one of the world's largest agricultural exhibitions and meetings held for grain producers annually in Bothaville, South Africa.

3.4.1 Mechanisation in the South African grain sector

The production of grain products in South Africa consists primarily of two processes, namely: i) production itself, and ii) harvesting. Initially, it was only possible to use machinery in the production process and harvesting was dependant on manual labourers. However, with the improvement of technology, the harvesting process has also become more mechanised (BFAP, 2012). Mechanised production methods are adding more value to the value chain in comparison with manual labour and will therefore stimulate agricultural growth and productivity (Ramaila *et al.*, 2011).

3.5 AGRICULTURAL VALUE CHAIN ANALYSIS

A value chain is defined by the Chartered Institute of Management Accountants (CIMA) as the arrangement of specific business activities in order to add value to products or services for the customer (end user) (Botten & Sims, 2004:74).

Haggblade *et al.* (2012:5) defined a value chain as a set of activities required to produce a product or service for the end consumer. A value chain can be seen as a link between supplier, producer, and consumer.

Furthermore, a value chain is defined by Webber and Austin (2013:9) as a framework of how a product is transferred from the initial producer of the product to the consumer.

It can therefore be concluded that a value chain is a network of activities needed in order to produce a product of value for the end user. Michael Porter developed the theory of value chains and how the management of this chain of activities can add value (Botten & Sims, 2004:74).

All of the activities that form part of the production process incur cost. It is therefore essential to understand the link between the activities and how cost is incurred in order to manage, realise and identify any possible cost advantages in the value chain (Haggblade *et al.*, 2012:10).

A value chain analysis is a tool used by organisations to identify opportunities to create income, minimise cost, and maximise value. Value chain analysis can provide insight into how to 'arrange' activities that add value in order to gain a competitive advantage (Haggblade *et al.*, 2012:10). Michael Porter also concluded that there are two ways of gaining a competitive advantage over competitors, namely i) product differentiation, and ii) cost leadership (Haggblade *et al.*, 2012:10; Botten & Sims, 2004:74).

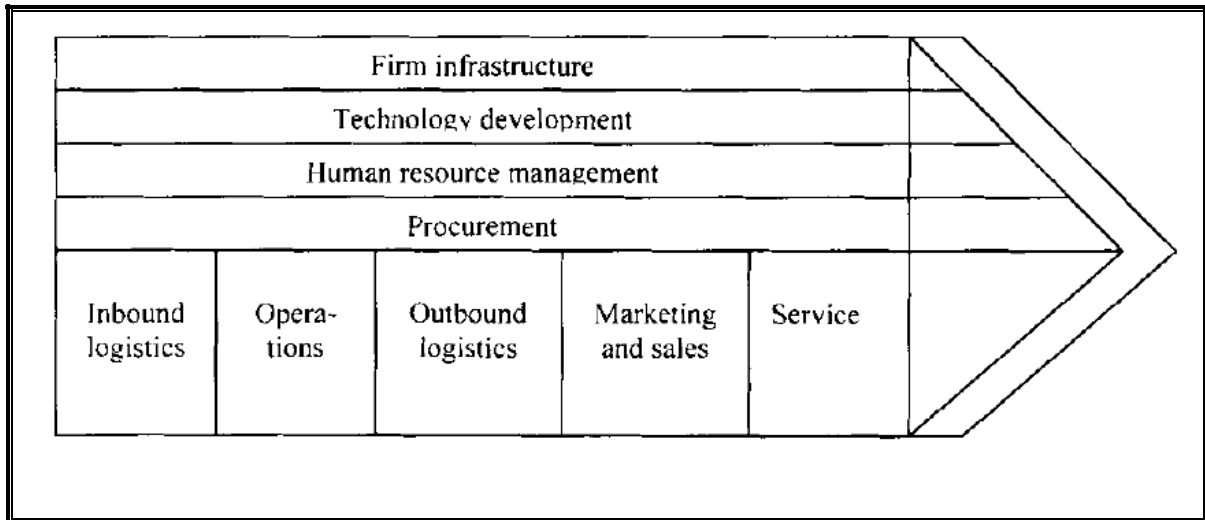
Cost leadership: The firm strives to gain competitive advantage through being the lowest cost producer of a product in the industry while still maintaining quality (CIMA, 2012a; CIMA, 2012b; Ehlers & Lazenby, 2006:70; Botten & Sims, 2004:74).

Product differentiation: The search to gain a competitive advantage above competitors in the industry by producing unique products that add value to the product, viewed through the eyes of the end producer (CIMA, 2012a; CIMA, 2012b; Ehlers & Lazenby, 2006:70).

In the agricultural sector, product differentiation is not really a proven method to use in order to gain a competitive advantage as there are limited products. However, cost leadership should therefore be pursued as a differentiation strategy in the agricultural sector.

Figure 3.1 below indicates the various activities that add value and incur cost in the production process. Various activities were grouped together by Porter, consisting of i) Primary activities, and ii) secondary activities. Primary activities include activities required to transform various inputs into final products, while secondary activities can be seen as activities supporting the primary activities. The quality of the primary activities is influenced by the supporting activities (CIMA, 2012a; CIMA, 2012b; Botten & Sims, 2004:74).

Figure 3.1: Porter's value chain of value adding activities



Source: Botten and Sims (2004:75)

Primary and secondary activities and the impact that increased production cost will have on the value chain will now be discussed.

3.5.1 Primary activities

Primary activities consist of the following value-adding activities (CIMA, 2012a; CIMA, 2012b; Ehlers & Lazenby, 2006:72; Botten & Sims, 2004:75):

Inbound logistics: This refers to the buying, receiving and handling of inputs required by production. In the agricultural industry, this is the purchasing, receiving and handling of seed, fertilisers, etc.

Operations and production: This refers to the process of converting inputs into a final product. Input includes both material and human resources.

Outbound logistics: This refers to the storing of the final product and the final distribution of products to customers. This activity can refer to the distribution of raw grain to the mills or silos.

Sales and marketing: Selling the final product to the customer and persuading customers to buy your product. After grain has been processed into, for example flour, it is now being sold to households.

After-sale service: Refers to the quality of service consumers can expect to receive after sales are incurred, including training and maintenance.

3.5.2 Secondary activities

Secondary activities include (CIMA, 2012a; CIMA, 2012b; Ehlers & Lazenby, 2006:72; Botten & Sims, 2004:75):

Procurement (people): This refers to the process in which inputs are required, i.e. the purchase of production materials, equipment, etc.

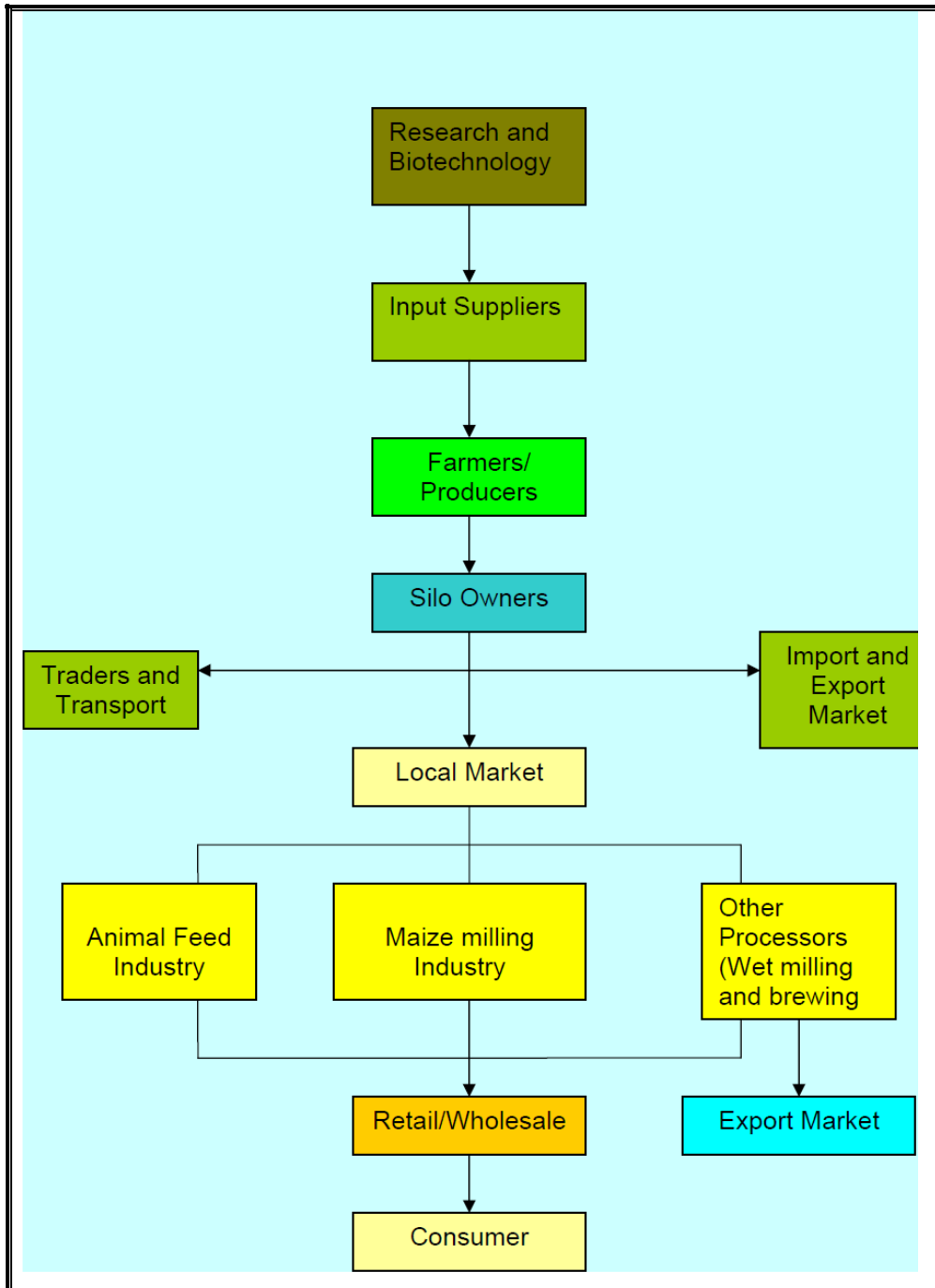
Technology development: This refers to the continuous process of improving the product design or production process. Within an agricultural context, this refers to increased mechanisation.

Human resource management: This refers to the quality of workers (skilled or unskilled) and the development of the workforce. Farm workers can receive training on how to operate new implements.

Firm infrastructure: Focuses on how the firm is structured and also on the financial structure of the organisation.

Figure 3.2 below illustrates a typical wheat market value chain. Inputs (seeds, fuel and fertiliser) are purchased from suppliers, followed by the production of wheat. This process mainly consists of planting and harvesting. It is in this stage of the production process where labour is required, and where rising labour cost can lead to a cost disadvantage in the value chain. From here, the finished product is stored and delivered to milling companies for further processing into flour and bran. Finished goods can then be either used for baking or processed further into animal feed or products such as cereal (DAFF, 2012b).

Figure 3.3: Maize market value chain



Source: DAFF (2012c)

3.5.3 Impact of increased labour cost on the agricultural value chain

A business can categorise and relate its activities to the above-mentioned primary and secondary activities. Through categorising activities and linking cost incurred to activities, cost advantages and disadvantages will be identified. Strengths and

weaknesses in the organisation can be identified, while the weaknesses and the effect thereof on the value chain should be managed in order to minimise the negative effects (Webber & Austin, 2013:9).

3.5.4 Summary

From the above discussion, it can be concluded that rising labour cost will have an impact on the agricultural value chain. Labour will influence both primary activities (operations and production) and secondary activities (human resource management). If production does not increase in proportion to higher wages, labour as an activity of the value chain will no longer add value to the final product, resulting in labour categorised as a cost disadvantage. Furthermore, the process of gaining a competitive advantage through cost leadership is also negatively affected because of rising labour cost. Kirsten (1999) stated that producers are struggling to keep on paying competitive wages.

3.6 MOZAMBIQUE AS DESTINATION TO RELOCATE OR DIVERSIFY TO

Mozambique is a land that is rich in natural and other resources, such as cheap labour, making it an attractive destination for investors (Mavie, 2012). A number of opportunities exist in Mozambique, as the country utilises a mere 10% of its total available arable land. Arable land in Mozambique amounts to 36 million hectares. Mozambique's full agricultural potential is therefore not being used effectively (Mazvimavi *et al.*, 2011).

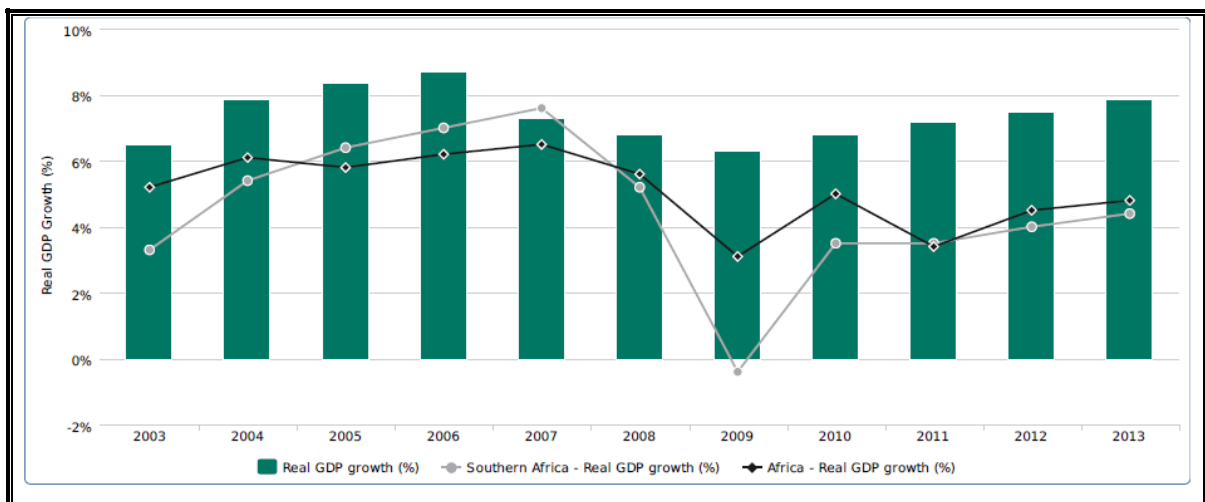
3.6.1 Mozambique's agricultural sector and its economic importance

Mozambique has had to overcome several challenges after gaining independence in 1975, e.g. a brain drain of skilled Portuguese, the civil war that only ended in 1992 and other natural disasters that had left the Mozambican economy in turmoil (Mazvimavi *et al.*, 2011). However, with an impressive average after-war growth rate of 7 to 8% from 1993 to 2012, all will agree that Mozambique has achieved noteworthy successes (Jones & Tarp, 2012:1; African Development Bank Group, 2011; KPMG, 2009). Mozambique is seen to be the "fastest growing nation on the African continent" (Ardeni, 1999:2). There are also favourable prospects for the

economy of Mozambique due to investments in the country and in their agricultural sector. Furthermore, good government plans aim to stimulate growth even further and to reduce unemployment and poverty (Jones & Tarp, 2012:1; African Economic Outlook, 2012).

Graph 3.6 below illustrates Mozambique’s impressive growth rate over the past decade. In 2011, Mozambique’s GDP real growth rate reached an astonishing 7.2%. It is furthermore expected that the GDP real growth rate will increase even further in 2012 and 2013, reaching 7.5% and 7.9%, respectively. This is due to infrastructure development and agricultural growth (African Economic Outlook, 2012). Due to information limitations and difficulties to obtain the latest GDP growth rates, 2012 and 2013 in graph 3.6 below are only projections.

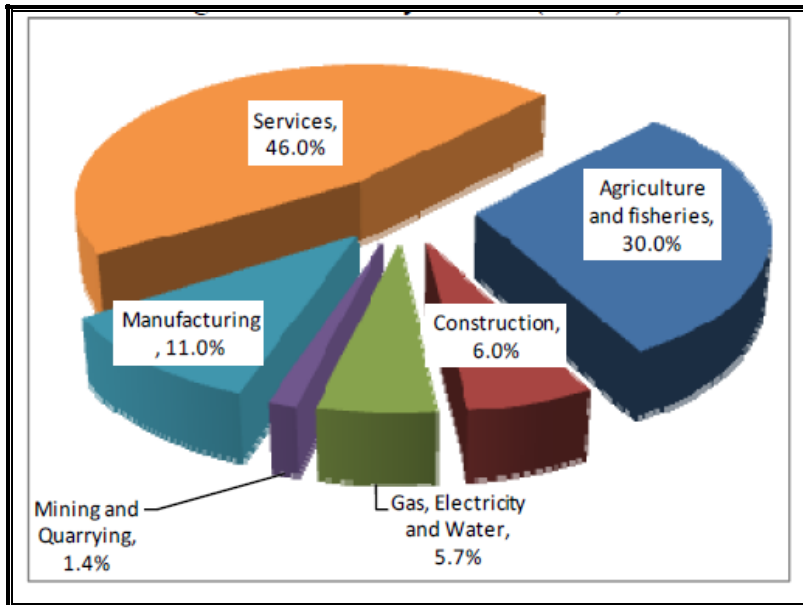
Graph 3.6: Mozambique real GDP growth rate: 2003-2013



Source: African Economic Outlook (2012)

The agricultural sector of Mozambique is the backbone of the country’s economy, with the sector contributing on average 25 to 30% to total GDP. Furthermore, 80% of Mozambique’s total labour market is employed in the agricultural sector (Mazvimavi *et al.*, 2012:4). In 2011, the agricultural sector’s contribution to total GDP amounted to 30.9% and it was expected to grow in 2012 with 9.9% (African Economic Outlook, 2012). The agricultural sector is the second largest sector in Mozambique after the services sector (African Development Bank Group, 2011). Graph 3.7 illustrates the contribution per sector.

Graph 3.7: GDP per sector: 2009

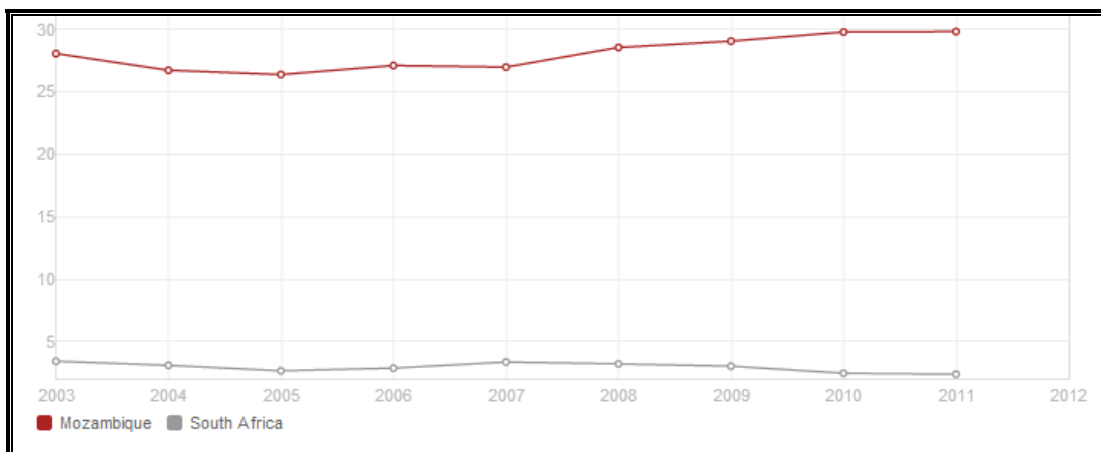


Source: African Development Bank Group (2011)

The agricultural sector of Mozambique is characterised by mostly smallholder producers (99.6%) and 70% of the Mozambican population is dependent on agriculture for their livelihood (African Economic Outlook, 2012).

Graph 3.8 compares the contribution of the agricultural sector towards total GDP in South Africa and Mozambique, respectively. It is evident that Mozambique is more dependent on its agricultural sector than South Africa.

Graph 3.8: Agricultural contribution to total GDP, 2003 – 2011



Source: World Bank (2013b)

The agricultural sector of Mozambique has also been identified as one of the key sectors to reduce poverty, unemployment and to stimulate continuous growth as part of the governments' plans, namely PARP (Action Plan for Reducing Poverty) 2011-2014. This plan's main focus is to reduce poverty by increasing agricultural productivity (African Economic Outlook, 2012:5).

All of the above clearly indicates the importance of the agricultural sector and the role it plays in Mozambique's economic development. The composition of the labour market, Mozambican grain market, labour productivity, and minimum wages in Mozambique's agricultural sector will now be discussed.

3.6.2 Agriculture as part of Mozambique's total labour market

As previously stated, the agricultural sector of Mozambique provides employment to 80% of the total Mozambican population (Mazvimavi *et al.*, 2012:4). The agricultural sector in Mozambique can therefore be seen as the largest provider of employment in Mozambique. This is also the reason why the agricultural sector had been chosen by the Mozambican Government as the sector to create employment, in order to uplift poverty in the country as part of their PARP government plan 2011-14 (African Economic Outlook, 2012:5).

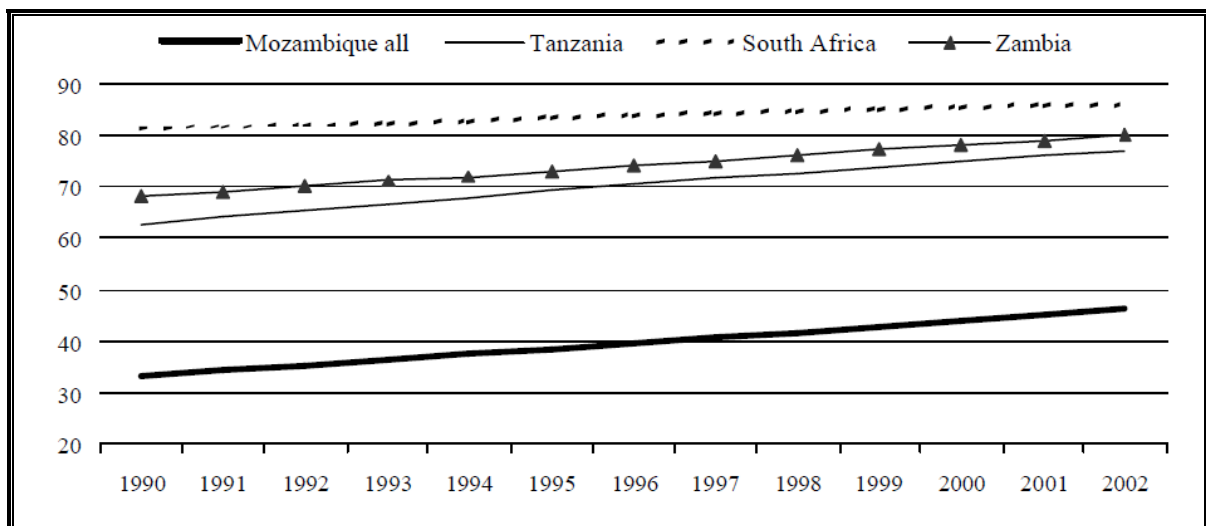
The unemployment rate in Mozambique stands at 27% (slightly higher than the current South African unemployment rate of 24.9%). With an annual growth rate of 2.8%, it is estimated that there will be 300 000 new entrants annually into the Mozambican labour market (African Economic Outlook, 2012:2). Government plans to create employment have been put in place.

3.6.3 Mozambique's agricultural labour market composition

Mozambique is said to have one of the lowest education levels in the world, with the adult population having only approximately 1.2 years of formal education. Of the total workforce in Mozambique, a mere 13% have completed secondary school, and 80% did not complete their primary school education (African Economic Outlook, 2012:12). An unskilled and uneducated labour market is therefore created. Improving productivity is therefore a serious challenge in

Mozambique (African Economic Outlook, 2012:12). Graph 3.9 compares the adult literacy rates of four African countries. The graph clearly indicates the low level of educated adults in Mozambique compared to South Africa. More recent figures were not available.

Graph 3.9: Adult literacy rates: 1990-2002



Source: World Indicators (2004); Brück & Van der Broeck (2006:19) (adapted)

It is commonly assumed that unskilled, uneducated employment equals cheaper labour. This can therefore create a cost advantage for agricultural investment in Mozambique. Producers may find it more cost effective to be labour intensive in a country with a low educated labour market.

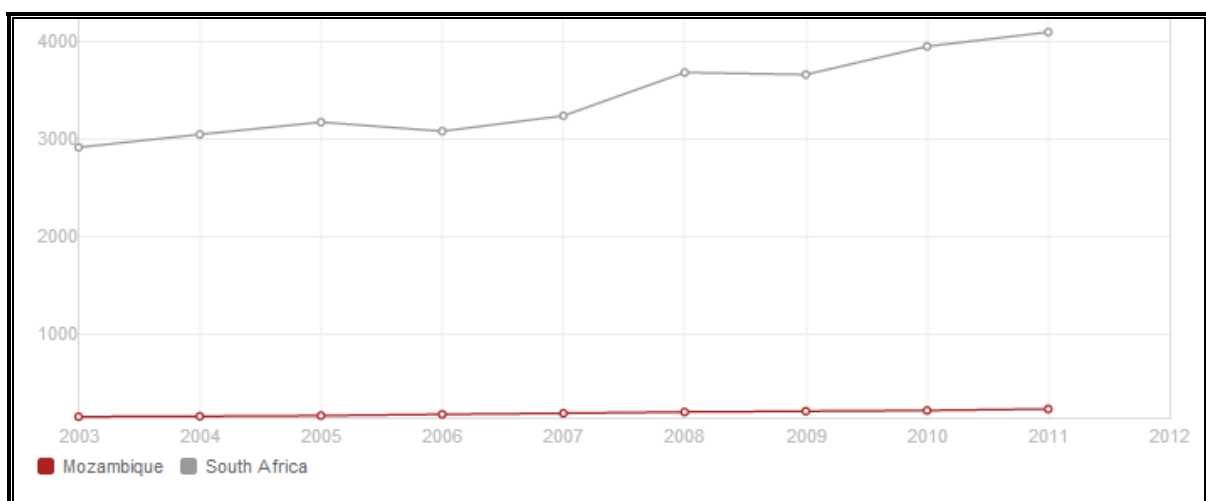
3.6.4 Productivity of farm workers in Mozambique

Productivity of labour is an important indicator of growth or potential to grow and creates employment in a country. Research by Sarkar (2004:1-2) has found that 50% of economic growth is generated through growth in productivity and that an increase of 2% in labour productivity can lead to an increase in total GDP of 1%.

As previously stated, labour productivity tends to be lower in less developed countries (Ramaila *et al.*, 2011), and the World Bank classifies Mozambique as a less developed/developing country, with a low income level. Sarkar (2004:21) stated that, in order for Mozambique to attract investment, the country must

increase its competitiveness. Increased competitiveness can be attributed to having a productive workforce. Low wages and a productive workforce can provide Mozambique with a comparative advantage, attracting foreign investors seeking to relocate their labour-intensive production process, due to high labour cost in the country of origin (Sarkar, 2004:21). According to the Global Competitiveness Index, in 2010, Mozambique was ranked 131st out of 139 countries; South Africa was ranked 54th (African Development Bank Group, 2011). Labour productivity is measured by calculating the output per worker of the value that a worker adds. Note that the concept of adding value relates to Porter’s value chain and gaining a comparative advantage. Graph 3.10 illustrates Mozambican labour productivity compared to South African labour productivity (value added per farm worker) in the agricultural sector specifically. Value added is compared using the US dollar as monetary value.

Graph 3.10: Mozambican vs. South African agricultural labour productivity: 2003-2012 (Value added per farm worker in US\$)



Source: World Bank (2013b)

It is evident from Graph 3.10 that labour productivity in Mozambique is very low when compared to South Africa’s labour productivity. In 2011, value added per worker in South Africa amounted to US\$4097.5 compared to Mozambique’s value added per worker of a mere US\$231.5. Various studies indicated that the agricultural sector of Mozambique has the lowest productivity when compared to other sectors in Mozambique and has also remained relatively stagnant over the

past few years (Nucifora & da Silva, 2013:71; Jones & Tarp, 2012:29). This may as well be seen as a reason why labour cost in South Africa is higher than in Mozambique. Sarkar (2004:28) found evidence that the main causes for Mozambique's low labour productivity include: i) a lack of awareness of productivity, ii) uneducated workforce, iii) a poor business environment, and iv) social issues such as HIV and AIDS.

Lower productivity equals lower wages; therefore, producers can exploit this situation of Mozambique to gain cost advantages. More, less-skilled workers can be employed into a labour intensive production process that does not require unique skills. Sarkar (2004:7) stated that a main activity when choosing a destination to relocate a labour-intensive industry to will be to investigate the host country's labour cost. Labour is a key variable in a producer's decision to relocate, but one factor that can overwhelm the cost advantages that cheap labour can provide is productivity, because the quality of inputs (material and labour) will directly affect the quality of the output or final products (Sarkar, 2004:32).

Evidence therefore suggests that, despite low wages, Mozambique's competitiveness and ability to attract foreign investors to stimulate agricultural growth, in order to create employment, are being undermined by Mozambique's relatively low levels of labour productivity.

3.6.5 Implementation of minimum wages in Mozambique

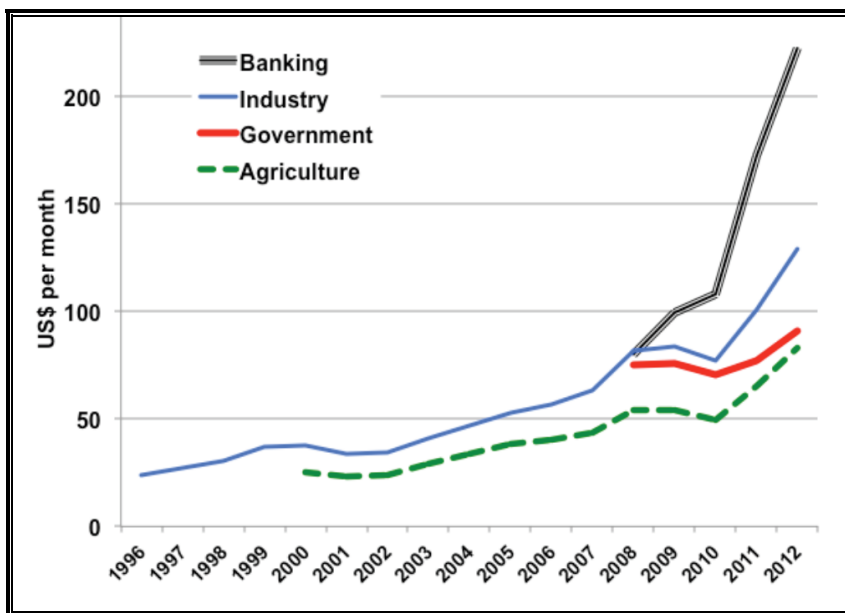
The Mozambican currency is the Metical. For comparison purposes and based on the format of available data, minimum wages will be compared using the US dollar as currency. The South African minimum wage will also be converted to US dollars, using the exchange rate as at 31 May 2013.

From 1996 to 2000, there was a single minimum wage for all sectors in Mozambique. In 2000, a separate rate was introduced for the agricultural and non-agricultural sectors of Mozambique. In 2008, 11 different minimum wage categories were introduced for the different sectors in Mozambique. Minimum wages are set annually. The effective date for each new wage announcement is

1 March to 28 February each year. In 2012, there were still 11 different minimum wages in Mozambique, but the categories vary each year (Hanlon, 2012).

Graph 3.11 illustrates the increasing trend of minimum wages in Mozambique from 1996 to 2012. It is evident from the graph that the minimum wage for the agricultural sector has increased each year, but is the lowest when compared to other sectors.

Graph 3.11: Mozambique minimum wage (US\$), 1996-2012



Source: Hanlon (2012)

Table 3.3 indicates the movement in minimum wage rates from 2000 to 2007 for the agricultural and non-agricultural sectors. The highlighted item in Table 3.4 illustrates the minimum wage movement for the agricultural sector after the introduction of 11 different categories. We can conclude that the minimum wage rate for agricultural labour in Mozambique has indeed increased each year.

Table 3.3: Minimum wages per month in Mozambique before implementation of different categories: 2000-2007

	Mt	\$	Mt	\$
	Non-agricultural		Agricultural	
2000	569	37,6	383	25,3
2001	666	33,6	459	23,2
2002	812	34,2	560	23,6
2003	983	41,1	700	29,3
2004	1 120	46,7	805	33,6
2005	1 277	53,0	918	38,1
2006	1 443	56,5	1 024	40,2
2007	1 645	63,6	1 126	43,6

Source: Hanlon (2012) adapted

Table 3.4: Mozambique minimum wages per month for different sectors: 2008-2012

Sector	Minimum wage, meticias					Minimum wage, US \$					%age change					
	08-Mt	09-Mt	10-Mt	11-Mt	12-Mt	08-\$	09-\$	10-\$	11-\$	12-\$	8-9 \$	9-10 \$	10-11 Mt	10-11 \$	11-12 Mt	11-12 \$
1: Agriculture, livestock, forestry	1,315	1,486	1,692	2,005	2,300	54.27	53.96	52.40	62.09	82.91	-0.6%	-2.9%	18.5%	18.5%	14.7%	33.5%
1a: Sugar	1,315	1,500	1,593	2,075		54.27	54.47	49.33	67.39		0.4%	-9.4%	30.3%	36.6%		
2: Fisheries	1,892	2,050	2,200	2,475	2,640	78.09	74.44	68.13	80.38	95.17	-4.7%	-8.5%	12.5%	18.0%	6.7%	18.4%
2a: Kapenta	1,810	1,900	2,090	2,300	2,485	74.70	68.99	64.73	74.70	89.58	-7.6%	-6.2%	10.0%	15.4%	8.0%	19.9%
3: Mining	1,892	2,120	2,400	2,890	3,526	78.09	76.98	74.33	93.86	127.11	-1.4%	-3.4%	20.4%	26.3%	22.0%	35.4%
3.a Quarry, sand					3,295					118.78						
4: Manufacturing	1,975	2,300	2,497	3,100	3,585	81.51	83.51	77.33	100.68	129.24	2.5%	-7.4%	24.1%	30.2%	15.6%	28.4%
4a Baking			2,497	2,850	3,021			77.33	92.56	108.90			14.1%	19.7%	6.0%	17.7%
5: Electricity, gas, water	2,140	2,403	2,662	3,222	3,817	88.32	87.25	82.44	104.64	137.60	-1.2%	-5.5%	21.0%	26.9%	18.5%	31.5%
5a large companies >100 workers			2,662	3,116				82.44	101.20				17.1%	22.8%		
6: Construction:	1,909	2,115	2,435	2,775	3,177	78.79	76.80	75.41	90.13	114.53	-2.5%	-1.8%	14.0%	19.5%	14.5%	27.1%
7: Non-financial services	1,926	2,250	2,550	2,996	3,510	79.49	81.70	78.97	97.30	126.53	2.8%	-3.3%	17.5%	23.2%	17.2%	30.0%
8: Financial activities	1,942	2,745	3,483	5,320	6,171	80.15	99.67	107.87	172.78	222.46	24.4%	8.2%	52.7%	60.2%	16.0%	28.7%
9: Public administration, security	1,826	2,083	2,270	2,380	2,522	75.36	75.64	70.30	77.30	90.92	0.4%	-7.1%	4.8%	10.0%	6.0%	17.6%
exchange rate at 1 Apr						24.23	27.54	32.29	30.79	27.74						

Source: Hanlon (2012)

The latest minimum wage rate announcement was made on 16 April 2013 and was effective from 1 April 2013, applied retroactively. The agricultural minimum wage increased from 2 300 meticaís (2012) to 2 500 meticaís, representing an increase of 8.7% (Macauhub, 2013). The agricultural sector remained the lowest paid sector in Mozambique. Jones and Tarp (2012:29) found that the given minimum wage of farm workers in Mozambique implies a much higher level of productivity. The conclusion made is that, although the agricultural sector in Mozambique is the lowest paid sector, farm workers are actually being overpaid, given their current level of productivity.

3.6.5.1 Comparing minimum wages for South Africa and Mozambique

In order to determine, based only on the cost of labour, whether it is still financially viable for producers to produce in South Africa, or whether they will gain cost advantages by relocating or diversifying to Mozambique, minimum wages for both South Africa and Mozambique will now be compared. The US\$ will be used for the comparison of wages, because the minimum wages of Mozambique in all data collected are already converted into US\$. Exchange rates as on Friday 31 May 2013 will be used for conversion purposes. Monthly wages are compared. Conclusions can more easily be made when wages are compared using a common currency.

Exchange rates as at 31 May 2013 (Bloomberg, 2013):

ZAR/US\$: 0.09926

MZN/US\$: 0.03356

Calculations:

South African wages in US\$ terms:

Monthly wage in South Africa * Exchange rate

R 2 274, 82 * 0.09926

US\$ 225, 72

Mozambican wages in terms of the US\$:

Monthly wages in Mozambique * Exchange rate

2500 meticaais * 0.03356

US\$ 89, 90

Table 3.5 illustrates the results and compares the minimum wages in South Africa and Mozambique.

Table 3.5: Minimum wages in South Africa and Mozambique: 2013-2014

	South Africa		Mozambique	
	ZAR	USD	MZN	USD
2013	R 2 274.82	\$ 225.72	2500 meticaais	\$ 89.90

Source: Own calculations

When minimum wages are compared using US\$ as currency, it is evident that labour in Mozambique is much cheaper than in South Africa. The difference in labour cost is US\$ 135.82.

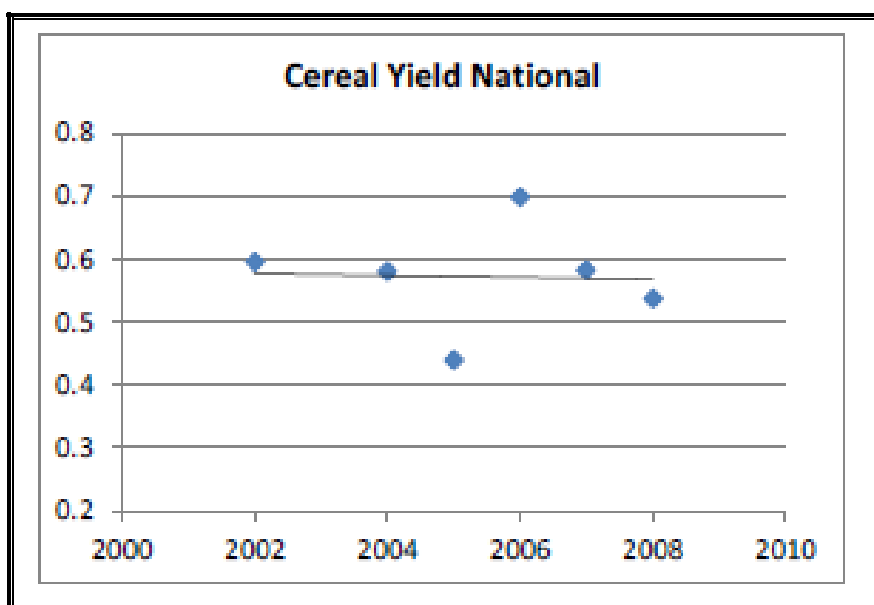
The above calculations clearly highlight the difference in minimum wages between the two countries when converted to US\$. This may indicate that cheap unskilled labour is available in Mozambique and furthermore in the grain market, unique skills are not a necessity. It seems that a cost advantage exists in terms of labour cost in Mozambique. However, one has to weigh up the cost of productivity being lost against the cost of cheaper labour. This cost can be viewed as an opportunity cost.

3.6.6 Grain production in Mozambique

The grain market of Mozambique is the primary source of seed for other producers (Mazvimavi *et al.*, 2011). Currently, wheat production in Mozambique is low and the annual production of wheat is not enough to meet consumption requirements. Mozambique imports a major part of its wheat requirements mostly from South Africa (Biacuana, 2009). The current annual production of wheat is a mere 22 000 tons, while government plans aim to increase production of wheat to 2 million tons annually by 2016/2017 (Macauhub, 2012). Mozambique, reliant on the import of basic foods, has been hit hard by the recent increases in food prices. Poor households in Mozambique now spend an average of 66% of their income on basic food products (Biacuana, 2009).

As previously mentioned, only 10% of Mozambique's arable land is being utilised. The agricultural sector in Mozambique therefore has huge potential, and if exploited can offer relief to Mozambique in terms of food deficits (Biacuana, 2009). According to Pauw *et al.* (2012), the wheat sector in Mozambique is still in its infant stages. All of these factors potentially create opportunities for experienced South African producers willing to accept risks. Graph 3.12 illustrates growth in the production of grain (cereal) in Mozambique from 2002 to 2008.

Graph 3.12: Production of cereal/gain in Mozambique: 2002-2008



Source: Pauw *et al.* (2012)

3.6.6.1 Impact of higher minimum wages on grain sector

Since the agricultural sector in Mozambique remains the lowest paid sector and unskilled labourers are mostly used, the agricultural sector in Mozambique still uses fairly primitive techniques (Pauw *et al.*, 2012). The trend of increased mechanisation is not as far developed in Mozambique as in South Africa and therefore agriculture in Mozambique remains labour intensive. Mazvimavi *et al.* (2012:5) indicated that a mere 5% of the total 3.3 million producers in Mozambique make use of improved technology.

3.7 SUMMARY

The aim of this chapter was to address the secondary objectives as set in Chapter 1 (refer page 9). These objectives are to determine the minimum wage for farm workers in South Africa and Mozambique respectively, and to analyse the stability of the labour market and the financial implication thereof. When the minimum wage rate for agriculture was compared between South Africa and Mozambique, it was found that Mozambique's rate is much lower than South Africa's. Furthermore, despite a recent increase in minimum wages for the agricultural sector, labour cost in Mozambique still remains relatively low. A cost advantage for agricultural labour does exist in Mozambique. Value can therefore be added by grain producers in order to gain a competitive advantage.

The literature further indicates that the agricultural sector of Mozambique has the lowest productivity when compared to other sectors in Mozambique. The cost of hiring more unskilled workers to compensate for the lower productivity can be regarded as an opportunity cost.

The agricultural sector in Mozambique has huge potential as grain production is low and the country is rich in natural resources. An added benefit is that South African producers can offer relief to Mozambique in terms of food deficits. All of these factors potentially create opportunities for experienced South African producers willing to accept risks.

Chapter 4 is presented in the form of a research article with the title: “An analysis of grain producers’ labour cost: The case of South Africa versus Mozambique”.

CHAPTER 4

4. ARTICLE 1: AN ANALYSIS OF GRAIN PRODUCERS' LABOUR COST: THE CASE OF SOUTH AFRICA VERSUS MOZAMBIQUE

4.1 ABSTRACT

The purpose of this study is to investigate the impact of the 2013 agricultural minimum wage increase of 51% on the grain sector specifically. Furthermore, this research aims to determine whether, based on the cost of labour, a cost advantage can be gained through relocating or diversifying agricultural activities to Mozambique, a land characterised by high growth rates, available natural resources and cheap labour. Qualitative research techniques were utilised to address the research problem. The results indicated that cheap, unskilled labour is available in Mozambique, which can possibly, if managed correctly, lead to a cost advantage. However, the cost of productivity being lost compared with the cost saving made due to cheaper labour has to be considered carefully. Factors such as underdeveloped infrastructure also affect profitability. This study will be of great value for South African producers considering relocating or diversifying to Mozambique. Overall, a producer cannot make a decision to relocate or diversify solely on labour cost.

Keywords: Agriculture, Employment, Grain, Labour, Labour productivity, Labour strikes, Mechanisation, Minimum wages, Mozambique, South Africa.

4.2 INTRODUCTION

The South African agricultural sector has undergone significant changes over the last number of years. Land reform processes, government policies and increased production costs leading to negative net farming income have left producers considering alternatives (Sherry, 2013; BFAP, 2012a; Mearns, 2011). These alternatives include: i) exiting farming to seek other employment, ii) diversifying farming activities to spread risks, and iii) relocating activities to other African countries (Hall, 2012). The result hereof is a trend of South African producers relocating or diversifying to other African countries in the last number of years (Hall, 2012). Renewed interest in this phenomenon was raised since the most recent announcement of an agricultural minimum wage increase of 51% from the 2012 to 2013 year (Anon, 2013; Sherry, 2013). The South African agricultural sector is labour intensive and therefore this increase in the minimum wage may have a significant impact on the profitability of the sector.

The importance of this paper is to highlight that if this trend of significant increases in wages stimulates the trend of producers relocating to other countries, it can have serious consequences for South Africa's ability to ensure food security. The value of the South African agricultural sectors should therefore not be underestimated (Greyling, 2012; Meyer *et al.*, 2009; Lestrada-Jefferis, 2000). The purpose of this study is to determine whether a labour cost advantage can be gained through relocating or diversifying agricultural activities to another African country, namely Mozambique. Mozambique is a popular relocation destination chosen by South African producers for reasons to be elaborated on later in the study. This study will compare various aspects influencing the agricultural sector and the labour market for both South Africa and Mozambique. Furthermore, the agricultural sector for both countries can be seen as diverse with different product markets reacting differently to changes in variables such as labour cost. This paper will focus on the grain market and its reactions and considerations towards changes therein. Previous research studies focused on the reasons for diversifying or relocating to other African countries and more specifically on acquisitions of African subsidiaries (Hall, 2012; Hall 2011). The Bureau for Food and Agricultural Policy (2012) conducted an analysis of agricultural wages in

South Africa focusing on specific sectors. However, a comprehensive study considering whether labour plays a role in the decision to relocate to Mozambique, the latter's labour conditions and the risk of entering the Mozambican agricultural market, could not be found. The purpose of this paper is therefore to fill this knowledge gap by investigating the current conditions in Mozambique. Furthermore, this paper will assist South African grain producers in their decision as to whether to relocate to Mozambique and investing in its agricultural sector, based purely on the cost of labour.

This paper will be organised as follows: the first section will provide an overview of the literature review, proposed research problem and research objectives, while the second section will provide general background to the topic. Section 3 will discuss the research design followed. Section 4 will comment on the trend of relocating or diversifying to other African countries, and this section will furthermore compare the economy, labour market, wages and productivity of labour for South Africa and Mozambique, respectively. The last section will present the findings and conclusions of the research study.

4.2.1 Literature review and research gap

A review of relevant previous research studies conducted revealed studies on i) foreign direct investment (FDI) in Africa, ii) labour productivity, input costs, and relocation of producers, and iii) labour-related issues. Most of these studies applied quantitative research techniques. The objective of the literature review was to ensure that an applicable research method was chosen and followed to answer the proposed research questions.

The research studies focusing on FDI include a study by Dippenaar (2009) that considered the reasons why large South African corporations invested in Sub-Saharan Africa and further explained the relevant policies and implications of FDI in Africa. Kaya and Erden (2008), and Dunning (1988, 1995, 1998, 2000) conducted studies on economic and business theories of investing in a foreign country. Research focusing mainly on FDI in the Middle East and North African (MENA) countries was conducted by Nicet-Chenaf and Rougier (2011).

Furthermore, a study determining the link between FDI and production levels was conducted by Dlamini and Fraser (2010).

Research performed by the International Monetary Fund (IMF) on general labour productivity, real wage rates and employment trends in South Africa concluded that higher wages resulted in total and formal employment being significantly and negatively affected (Klein, 2012). This study established a definite link between labour productivity and real wages by statistical analysis. Kirsten (1999) conducted a study focusing on the South African agricultural input industry and the effect on competitiveness. The study concluded that it is crucial that the agricultural input industry is integrated and well aligned to the agricultural value chain to ensure competitiveness and the survival of the agricultural sector as a whole. Hall (2012, 2011) concentrated on agricultural businesses and producers relocating to the rest of Africa. These two descriptive studies investigated specific investments made in the rest of Africa and attempted to find reasons for the phenomena of producers relocating or diversifying.

BFAP (2012a) investigated the effect of South African labour increases and the result thereof on four agricultural sectors by developing a predictive economic model. This report focused mainly on the Western Cape area. This report also did not consider the trend of producers relocating or diversifying to Mozambique, nor to other African countries. Furthermore, Simbi and Aliber (2000) investigated the labour trends in the agricultural sector of South Africa.

To reiterate, none of these studies have investigated the effect of labour cost on the Mozambican agricultural investment decision. Research performed on this topic is therefore limited and is very actual due to the recent developments in the South African agricultural sector and labour market. This research is primarily concerned with filling this knowledge gap.

4.2.2 Problem statement and research objectives

As highlighted in the previous section, various negative factors in the South African agricultural sector result in producers considering alternatives to farming. One of the identified alternatives includes producers considering relocating or diversifying to other African countries. Being rich in natural and other resources, offering cheap labour and the government offering tax benefits to relocating South African producers, resulted in Mozambique being identified as host country to relocate or diversify agricultural activities to. Relocating or diversifying to Mozambique has therefore been identified as a possible profitable investment opportunity. However, a producer has to determine whether it is financially more viable to relocate or diversify to Mozambique as opposed to South Africa.

The problem statement can therefore be summarised as follows: Is it financially more viable for South African producers to relocate or diversify their agricultural activities to Mozambique based on the cost of agricultural labour? As grain producers play a vital role in providing food security, the focus will be on grain producers specifically.

In order to address the above-mentioned problem statement, the following secondary objectives were set: i) to determine and compare the minimum wages for farm workers in South Africa and Mozambique, respectively, ii) to analyse the stability of each country's labour market, and iii) to determine whether higher wages lead to increased productivity in South Africa and Mozambique.

4.3 BACKGROUND

The South African agricultural sector is important for a number of reasons, namely:

- The sector has been identified as a key sector in *employment creation* to assist in reducing poverty and inequality in our country (Meyer, 2012);
- It is an earner of *foreign exchange* (Roberts & Antrobus, 2013; Lestrada-Jefferis, 2000);
- The sector provides *food security* (Greyling, 2012); and

- The agricultural sector is often a *supplier of products* required for production in other sectors (Meyer *et al.*, 2009:2). However, the dilapidated state of the agricultural sector seems to flow over to other sectors further down the value chain.

South Africa underwent significant transformation since the first democratic elections in 1994. This change in regime also went along with structural changes in different markets and the implementation of new governmental policies. Unfavourable conditions in South Africa, including i) political instability, ii) land reform processes, iii) labour unrest, and iv) increases in production inputs including fertiliser, fuel, and labour, led to a new trend being born in South Africa (Mearns, 2011; Vink & Hall, 2010). This trend can be depicted as South African producers relocating or diversifying their agricultural activities to other African countries (Hall, 2012). To exacerbate this trend, *Farmers Weekly* (2010), a popular agricultural magazine, declared South Africa and Zimbabwe as the only two countries not safe to invest in because of land reform programmes.

The leaders of other African countries are exploiting these unfavourable conditions in South Africa to attract experienced South African producers by offering them favourable conditions, for example Zambia offering to renounce import duties and value added tax (Reuters, 2010a). South African producers have already established profitable operations in Mozambique, Malawi, Kenya and Botswana (Reuters, 2010a). This trend of producers relocating or diversifying to other African countries can be best described as a brain drain of knowledgeable South African producers. However, relocating or diversifying to another country poses a number of challenges of which each will require thorough consideration and planning. Challenges include i) political instability, ii) transportation, iii) underdeveloped infrastructure, iv) labour cost, v) exchange rate fluctuations, and vi) climate change (Kriel, 2012; Deloitte, 2011).

However, in South Africa, the violent protests and resultant increase in minimum wages in the agricultural sector pose its own challenges. The latest minimum wage announcement for all farm workers in South Africa was publicly announced on 5 February 2013, effective from 1 March 2013. The fixed minimum wage for

employees in the agricultural sector for the 2013 to 2014 financial year will be R105 per day for a nine hour work day (Van der Westhuizen, 2013a; BFAP, 2012a). After this announcement by the Minister of Labour, Ms Mildred Oliphant, 2 000 retrenchments were made in the agricultural sector alone (Anon, 2013). The minimum wage for the South African agriculture sector for the 2013 to 2014 year represents an increase of 51% from the previous year (BFAP, 2012a).

4.4 RESEARCH DESIGN

Previous research studies on FDI followed quantitative research techniques. This exploratory study, however, will make use of qualitative research techniques due to statistical data limitations. The research population consisted of individuals with extensive experience in the agricultural sector. Semi-structured interviews were conducted with: i) Dr Ferdi Meyer, Head of the Bureau for Food and Agricultural Policy (BFAP). BFAP is a coordinated research entity focusing on multi-disciplinary research to improve decision-making. Dr Meyer is also a successful grain producer and involved in developing governmental plans for agriculture, and ii) Ms Elize van der Westhuizen, Head of Labour Relations at Agri SA, and iii) Mr Johan Pienaar, Deputy Executive Director of Agri SA and Deputy Chairman of the African committee at Agri SA. Agri SA is an African institution that strives to promote development, profitability, stability and sustainability of commercial agriculture in South Africa, on both national and international policy level. Making use of this relatively small number of participants was a conscious choice of trade-off between quality and quantity of data by the researcher. The basis for this decision is that more reliable data was obtained by interviewing a small number of experts in this field of research than interviewing a large number of inadequate informed producers.

Open-ended questions were asked during the semi-structured interviews to obtain the interviewee's personal insight into the topic by formulating answers in his/her own words. The aim of this study was not to be a comparative study between the views of the respondents, but rather to investigate and report on the new knowledge obtained.

Knowledge obtained during the interviews conducted will be contextualised under appropriate headings and sub-sections, along with additional information obtained during a critical review of the relevant literature. As such, the results of the interviews will be presented as a cohesive unit.

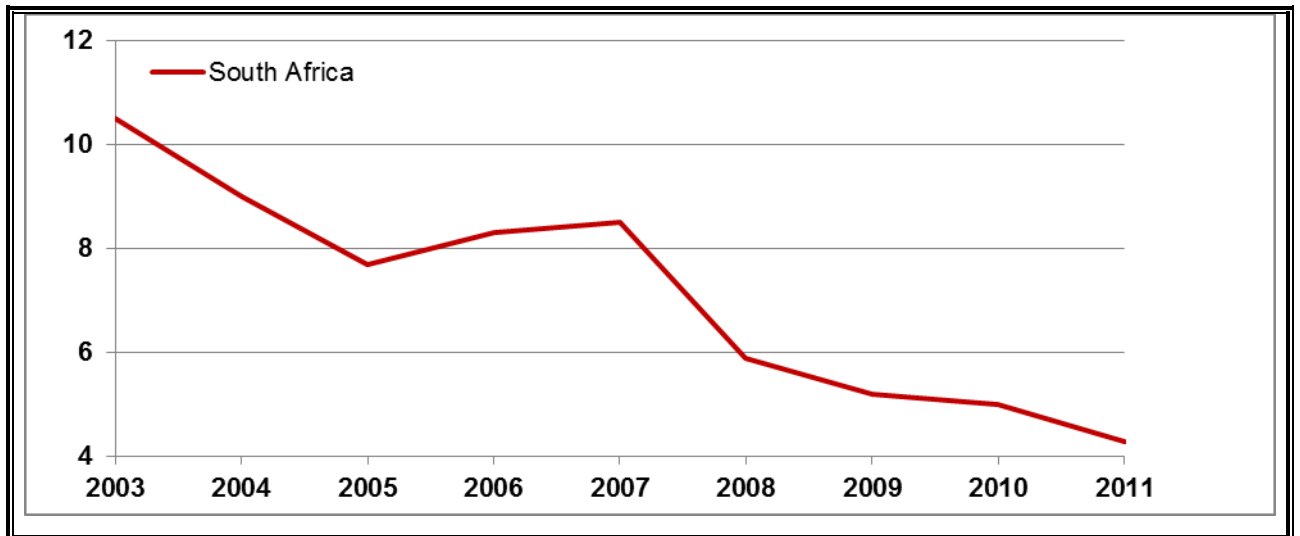
4.5 ANALYSIS OF THE SOUTH AFRICAN AGRICULTURAL ENVIRONMENT

Cultivated land in South Africa amounts to 12.76 million hectares, of which 82% is used for commercial agricultural activities. The agricultural sector of South Africa utilises 80% of total land in South Africa, but a mere 12% is arable (AgriSETA, 2010). Since the upcoming of the mining sector in South Africa, the mining sector has begun utilising productive agricultural land in South Africa (Meyer, 2013; BFAP, 2012b). South Africa's agricultural sector represented 2.6% of the total Gross Domestic Product (GDP) in 2012, compared to the 1.9% in 2011. These figures are compared to the 7.1% agriculture represented in 1970 (DAFF, 2012:7). It is therefore evident that the agricultural sector has declined in its total contribution to GDP. The agricultural sector as part of the Government plan, Vision 2030, aims to create 1 million employment opportunities in the agricultural sector of South Africa by 2030. This goal may become unreachable, considering the retrenchments made after the 51% wage increase combined with the nearly 800 producers who have already successfully relocated to Mozambique, leading to a reduction in employment opportunities (Reuters, 2010b). Considering the current economic state, economists suggest that this goal will definitely not be reached. However, the goal of creating 1 million jobs in the agricultural sector was set given 'perfect conditions'. South Africa does possess the necessary natural resources, skills, systems, and capacity to reach this goal, but all of this potential is not being utilised efficiently (Meyer, 2013).

From 2012 to 2013, there was an increase in total agricultural employment from 656 000 to 739 000 (Stats SA, 2013), but this is low compared to previous years. For example, in 1970, the commercial farming sector employed 30% of South Africa's economically active population, with this figure reducing to only 8.8% in 2007 (Roberts & Antrobus, 2013). Since then, this figure has declined to a mere 4% today (Own calculation from data of StatsSA, 2013). Forecasts anticipates that

a further 120 000 jobs will be lost in the agricultural sector of South Africa over the next two to three years (Meyer, 2013). Figure 4.1 illustrates the declining number of workers employed in the South African agricultural sector according to data extracted from the World Bank's database.

Figure 4.1: Employment in agricultural sector of South Africa: 2003 to 2011 (% of total employment)



Source: World Bank Indicators (2013)

From the above table it is evident that employment in the South African agricultural sector has declined significantly from 2003 to 2011. Furthermore, taking cognisance of the above-mentioned discussion, it is clear that agriculture as a whole has declined over the past four decades. However, this decline can also be attributable to not only the agricultural sector declining, but other sectors in South Africa growing faster (Makhura, 2013; Meyer, 2013). The trend of producers relocating or diversifying to other countries, increases in production cost, and land reform processes do indeed contribute to the decline in the agricultural sector, but cannot be regarded as the only contributors. A global decline in the agricultural sectors has been observed in countries such as Argentina, Australia, and India. This trend evident in South Africa should therefore be viewed in perspective and within context.

With regard to employment, distinction should also be drawn between developed and developing countries. In a developed economy, the aim is to employ fewer people in the primary sectors and more people in secondary processing sectors (Meyer, 2013). South Africa is classified as a developing economy.

4.5.1 Analysis of labour cost in a South African agricultural environment

Minimum wages in South Africa were first implemented in 2002 effective from 1 March 2003 (Roberts & Antrobus, 2013). The main reason for this implementation was to protect farm workers, reduce poverty and regulate the living conditions of farm workers (Kassier *et al.*, 2003:7). During the time of implementation, evidence was found that the agricultural sector could afford paying minimum wages (Vink, 2001:60). However, in a country with little to no social issues, higher wages can have a positive effect provided that a positive and sustainable environment can be created. As the government aims to reduce poverty and provide better living conditions to all, South Africa remains a country where social problems, such as unemployment, remain a reality (Meyer, 2013). Given a minimum wage of R105 per day, research indicated that agricultural producers will not be able to cover operating expenses resulting in negative net income (Meyer, 2013).

Producers will therefore have to investigate other options, such as i) mechanisation, ii) substituting less skilled workers with more skilled workers, and iii) relocating or diversifying operations in order to spread and reduce risk (BFAP, 2012a). Simbi and Aliber (2000) concluded that labour-intensive producers are struggling to maintain employee figures and pay competitive wages. Industries mostly affected with drastic increases in labour cost will be labour-intensive industries where labour constitutes approximately 30% of total production cost (Meyer, 2013; Pienaar, 2013; Van der Westhuizen, 2013b). Labour, on a typical grain producing farm, contributes approximately 7.65% of total production cost given current conditions (BFAP, 2012a). The grain sector in South Africa will therefore be affected by higher labour cost, but not to the same extent as other sectors such as the vegetable market (Meyer, 2013).

Table 4.1 illustrates the composition of minimum wages for the 2013 to 2014 year. According to the Basic Conditions of Employment Act (75 of 1997), the monthly wage of R2 274.82 is said to be only the *cash* wage, while 10% can be deducted for accommodation benefits and another 10% for food supplies provided to the workers. All other employee benefits will be additional to the fixed minimum monthly wage. The cost-to-company will therefore exceed the fixed monthly wage of R2 274.82, leading to negative net farming income.

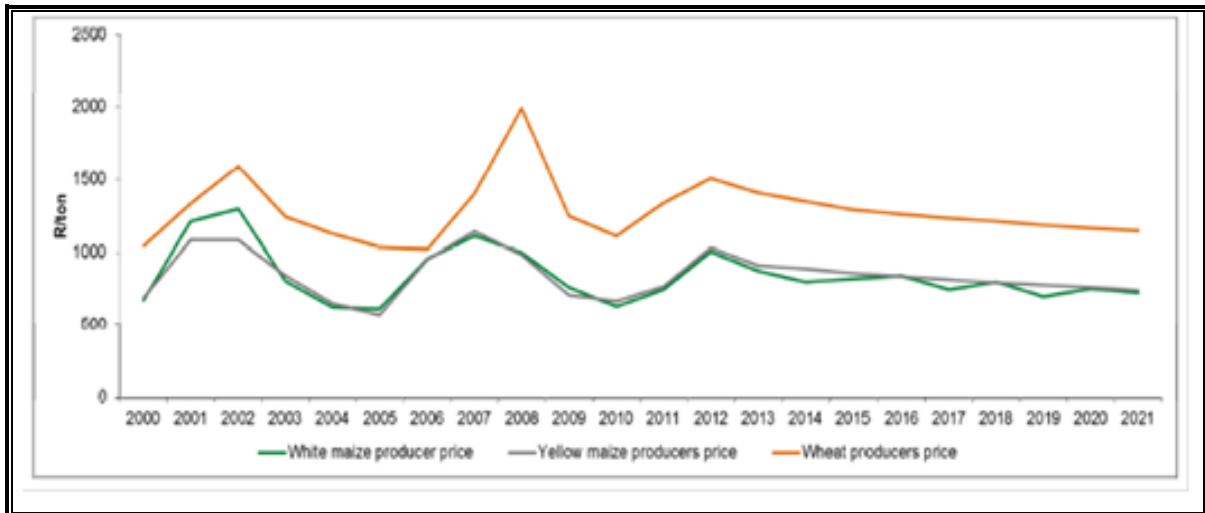
Table 4.1: Composition of 2013 to 2014 minimum wage

Monthly	Weekly	Daily	Hourly
R2 274.82	R525.00	R105.00*	R11.66
		* 9 hour work day	

Source: Van der Westhuizen (2013a), adapted

Figure 4.2 illustrates expected real prices of wheat and maize, being the two largest contributors to the grain market. It is forecasted that a decline in commodity prices will occur from 2012 to 2021. If prices follow expectations and input cost such as labour continues to increase, there will no longer be any incentive for producers to take agricultural risks in South Africa, unless increased mechanisation can be implemented. However, not all agricultural industries are able to mechanise to the same extent (BFAP, 2012a). For industries not able to mechanise in order to remain profitable, it may become more attractive to relocate.

Figure 4.2: Real prices of maize and wheat, 2000-2021



Source: BFAP (2012a)

A distinction should be drawn between permanent workers and seasonal workers in agriculture. In some areas, established grain producers already pay permanent workers and tractor drivers according to the given minimum wage rate; however, it becomes problematic when seasonal workers demand the minimum wage. Producers cannot afford to pay permanent workers and seasonal workers at the same rate. In order to address this issue, producers will employ seasonal workers, but will adjust the hours worked in order to pay less than the announced R105 per day for a nine-hour workday. When seasonal workers move into the same pay scale as permanent workers, operating expenses cannot be covered and producers are not able to produce competitively (Meyer, 2013).

Another important aspect to consider with wages continuously increasing is the productivity of farm workers. The ideal is that wage increases should equal increased productivity in order to remain competitive and add value to the value chain. Sharp (2011) stated that productivity/value added per farm worker is a key indicator of job creation. Furthermore, producers will be motivated to pay workers more when increased wages lead to greater productivity or output. Therefore, increased labour cost should lead to additional value to the organisation. Meyer *et al.* (2009:6) stated that of all formal workers, 17.1% are employed in the South African agricultural sector, but produce a scarce 3.3% of total output.

The interview results also concluded that labour workers in South Africa lack productivity. Labour productivity reached an ultimate low in 2011, showing a negative growth of -1% and continues to decline even further (Sharp, 2011). As social issues are rife in South Africa, combined with the quality of school leavers deteriorating, producers are now responsible for the development and training of workers in order to increase workers' productivity (Meyer, 2013). In South Africa, a negative correlation between wages and productivity exists (Klein, 2012).

4.6 ANALYSIS OF THE MOZAMBIKAN AGRICULTURAL ENVIRONMENT

The agricultural sector of Mozambique is often described as the backbone of the Mozambican economy. Mozambique is home to 36 million hectares of arable land, of which a mere 10% is utilised. Mozambique's full agricultural potential is therefore not being used effectively (Mazvimavi *et al.*, 2011). The above-mentioned available land, along with natural and physical resources, contributes to making Mozambique a suitable host country to relocate or diversify agricultural activities to (Mavie, 2012).

Mozambique has had to overcome several challenges after gaining independence in 1975, e.g. a brain drain of skilled Portuguese people, the civil war that only ended in 1992 and other natural disasters had left the Mozambican economy in turmoil (Mazvimavi *et al.*, 2011). However, with an impressive average after-war growth rate of 7 to 8% from 1993 to 2012, it can be agreed that Mozambique has achieved noteworthy successes (Jones & Tarp, 2012:1; African Development Bank Group, 2011; KPMG, 2009). Mozambique is seen to be the "fastest growing nation on the African continent" (Ardeni, 1999:2). The prospects for the Mozambican economy are favourable due to investments in the country and in their agricultural sector. Furthermore, decent government plans aiming to further stimulate growth and reduce unemployment and poverty will contribute to sustainable growth (African Economic Outlook, 2012; Jones & Tarp, 2012:1).

Agriculture in Mozambique is the second largest contributor to total GDP after the service sector, contributing 25 to 30% annually to total GDP. In 2011, the agricultural sector's contribution to total GDP amounted to 30.9% and it was expected to grow in 2012 with 9.9% (African Economic Outlook, 2012). In 2011,

Mozambique's GDP real growth rate reached an astonishing 7.2%, and it is expected that the GDP real growth rate will increase even further in 2012 and 2013, reaching 7.5 and 7.9% respectively. This is due to infrastructure development and agricultural growth (African Economic Outlook, 2012).

4.6.1 Barriers to entry into Mozambican agricultural sector

There are no legislative barriers to entry when relocating or diversifying to Mozambique. Furthermore, zero substitutes or competition exists specifically in the Mozambican grain market. Other barriers to entry include: i) high initial capital investment required (for machinery and infrastructure development), ii) retaining a qualified and productive labour market, iii) highly underdeveloped infrastructure, and iv) governmental approval and distribution of land (Pienaar, 2013; Van der Westhuizen, 2013). Agri SA MOZ is an independent organisation regulating and co-ordinating the process of producers relocating or diversifying to Mozambique.

It was established that if the investor is not properly informed about the host country and other factors affecting the investment, the investment may perform poorer in relation to investments made upon more extensive information (Liljebloom & Löflund, 2005).

4.6.2 Analysis of labour cost in a Mozambican agricultural environment

Approximately 80% of Mozambique's total labour force is employed in the agricultural sector (Mazvimavi, 2012:4), and a significant 70% of the Mozambican population is dependent on agriculture for their livelihood (African Economic Outlook, 2012). The agricultural sector in Mozambique is the largest provider of employment in Mozambique. This can also be viewed as the reason why the Mozambican government identified the agricultural sector as part of the government plan, PARP (Action Plan for Reducing Poverty) 2011-14. This plan aims to stimulate growth through agricultural activities and reduce unemployment (African Economic Outlook, 2012:5).

The Mozambican agricultural sector is primarily labour intensive, and not as developed as South Africa in terms of mechanisation (Pauw *et al.*, 2012). This can

partly be contributed to Mozambique being a less developed country compared to South Africa (Meyer, 2013; Pienaar, 2013; Van der Westhuizen, 2013b). This is confirmed by research indicating that less developed countries are less mechanised than developed countries (Mazvimavi *et al.*, 2012:5; Pauw *et al.*, 2012; Ramaila *et al.*, 2011).

Minimum wages in Mozambique were first implemented in 1996, with a single minimum wage for all the sectors. From 2000 to 2007, a distinction was drawn between minimum wages for agricultural and non-agricultural sectors. Sectorial minimum wages were first introduced in 2008. In 2012, there were 11 different sectors, with sectors varying each year (Hanlon, 2012). However, the agricultural sector in Mozambique remains the lowest paid sector in Mozambique. The latest minimum wage rate announcement was made on 16 April 2013 and is effective from 1 April 2013, applied retrospectively. The agricultural minimum wage increased from 2 300 meticaïs (2012) to 2 500 meticaïs (2013), which represents an increase of 8.7% (Macauhub, 2013).

As discussed in section 4.5, increased wages should result in increased productivity. Labour productivity in Mozambique is among the lowest in the world (Nucifora & da Silva, 2013:71; Jones & Tarp, 2012:29; African Development Bank Group, 2011). Research conducted by Jones and Tarp (2012:29) suggests that the given minimum wage of farm workers in Mozambique implies a much higher level of productivity. Statistics indicate that the adult population in Mozambique only received approximately 1.2 years of formal education, thereby creating an unskilled and less productive workforce (African Economic Outlook, 2012:12). Labour productivity is an important indicator of growth or potential for growth in a country. In order for Mozambique to be competitive and attract foreign investors, the productivity of the workforce has to improve, otherwise foreign investment might be lost.

4.6.3 Comparing agricultural wages for South Africa and Mozambique

The Mozambican currency is the Meticaï, while South Africa's currency is the South African rand. The minimum wage rates for both South Africa and Mozambique were converted to the US dollar to ensure comparability and create a

common denominator. The exchange rate as on 31 May 2013 was used for conversion purposes.

Exchange rates as on 31 May 2013:

ZAR/USD: 0.09926 and MZN/USD: 0.03356 (Bloomberg, 2013)

Table 4.2 illustrates the results after the conversion.

Table 4.2: Minimum wages in South Africa and Mozambique, 2013 and 2014

	South Africa		Mozambique	
	ZAR	USD	MZN	USD
2013	R 2 274.82	\$ 225.72	2500 meticaais	\$ 89.90

Source: Own calculation (2013)

It is evident from the above calculations that labour cost in Mozambique is significantly cheaper than in South Africa with a monthly wage difference of \$135.82. This difference will be relevant as evidence implies that when considering relocating or diversifying financial factors should carry the most weight (Meyer, 2013). The difference may partly be contributed to workers being less productive in Mozambique, as it is commonly assumed that lower productivity equals lower wages. A cost advantage may therefore be gained through producing in Mozambique, and value might be added to the agricultural value chain. However, it may be argued that although the workforce in Mozambique is less productive, the difference in wage rates is so significant that a producer may find it more cost effective to employ two more workers to fill the gap of lost productivity. This alternative can be followed rather than producing in South Africa while paying a wage rate that will eventually lead to the producer not having the ability to cover operating expenses.

Evidence provided suggests that labour is a key variable in a producer's decision to relocate. However, a factor than can exceed the cost advantages of cheap labour is productivity, as the quality of inputs (material and labour) will directly affect the quality of the output or final products (Sarkar, 2004:32).

4.7 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The purpose of this study was to determine whether, based on the cost of labour, a cost advantage can be gained through relocating or diversifying agricultural activities to Mozambique. It was found that cheap unskilled labour is available in Mozambique, which can possibly, if managed correctly, add value to a value chain and lead to cost advantages. Notwithstanding, the labour productivity in Mozambique is among the lowest in the world and is less mechanised. However, it is recommended that a South African producer therefore compare the saving as a result of cheaper labour with the cost of productivity being lost due to lower productivity and less mechanisation.

It was furthermore found that, in a grain market where unique skills are not a necessity, producers can possibly employ more less-skilled workers in order to exploit the opportunity of cheaper labour cost in Mozambique.

However, it is recommended that a producer should also consider variables other than labour when deciding whether to relocate or diversify to Mozambique. Firstly, the grain market in Mozambique is still highly underdeveloped and there is a growth opportunity; secondly, productivity in South Africa is declining at a rapid pace, while wages are increasing at a significant rate. Thirdly, Mozambique lacks developed infrastructure, which has a cost implication. Fourthly, the poor quality of roads can make farms unreachable and the transporting of final goods to markets impossible.

Finally, increased labour costs will influence South African producers' decision to relocate or diversify to other African countries, but of all agricultural sectors the grain sector will be least affected by increased labour cost as it is not as labour intensive. It can therefore be concluded that a cost advantage can be gained by relocating or diversifying to Mozambique.

The practical implication of this research is that the South African government will have to take pro-active steps to encourage knowledgeable producers to remain in South Africa by introducing agricultural-friendly policies, including labour-related policies; otherwise, this trend of producers relocating will result in a brain drain of

knowledgeable producers and in turn will increase the pressure on food security in South Africa.

The areas for further research include duplicating this study to include the impact of higher wages on other more labour-intensive sectors, such as vegetable farming.

4.8 REFERENCES

- African Development Bank Group. 2011. Republic of Mozambique: Country Strategy paper 2011-2015.
<http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/Mozambique%20-%202011-15%20CSP.pdf> Date of access: 22 May 2013.
- African Economic Outlook. 2012. Mozambique 2012.
<http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Mozambique%20Full%20PDF%20Country%20Note.pdf> Date of access: 22 May 2013.
- AgriSETA. 2010. Sector analysis Agriculture. *Prepared for submission to the Department of Higher Education and Training.*
http://www.agriseta.co.za/downloads/news/AGRISETA_Sector_Analysis_290610-version_2.pdf Date of access: 11 May 2013.
- Anon. 2013. Farm workers lose jobs after wage hike.
<http://www.bizcommunity.com/Article/196/475/88918.html> Date of access: 5 February 2013.
- Ardeni, P.G. 2009. Economic Growth in Mozambique? An Assessment.
<http://www.dse.unibo.it/wp/381.pdf> Date of access: 22 May 2013.
- Basic Conditions of Employment Act see South Africa.
- BFAP (Bureau for Food and Agricultural Policy). 2012a. Farm sectoral determinations: An analysis of agricultural wages in South Africa.
<http://bfap.co.za/documents/research%20reports/BFAP%20farm%20sector%20determination%20report%20draft%2017%20Dec.pdf> Date of access: 15 April 2013.
- BFAP (Bureau for Food and Agricultural Policy). 2012b. Evaluating the impact of coal mining on agriculture in the Delmas, Ogies and Leandra Districts – With a specific focus on maize production. Prepared by BFAP for the Maize Trust.

[http://bfap.co.za/documents/research%20reports/The%20impact%20of%20coal%20mining%20on%20agriculture%20-%20a%20Pilot%20study%20focus,%20based%20on%20maize%20production%20\(2012\).pdf](http://bfap.co.za/documents/research%20reports/The%20impact%20of%20coal%20mining%20on%20agriculture%20-%20a%20Pilot%20study%20focus,%20based%20on%20maize%20production%20(2012).pdf)

Date of access: 21 August 2013.

Bloomberg. 2013. Currency converter.

<http://www.bloomberg.com/markets/currencies/currency-converter/> Date of access: 31 May 2013.

DAFF (Department of Agriculture, Fisheries and Forestry). 2012. Economic review of the South African Agriculture. <http://www.daff.gov.za/docs/statsinfo/EcoReview2012.pdf> Date of access: 9 April 2013.

Deloitte. 2011. Four key success factors to growing Agriculture opportunities in Africa. <http://www.deloitte.com/assets/DcomSouthAfrica/Local%20Assets/Documents/Agribusiness%20-%20Four%20key%20success%20factors.pdf> Date of access: 5 February 2013.

Dippenaar, A. 2009. What drives large South African corporations to invest in Sub-Saharan Africa? CEO's perspectives and implications for FDI policies. *Natural Resources Forum*, 33: 199-210.

Dlamini, T.S & Fraser, G.C.G. 2010. Foreign direct investment in the agriculture sector of South Africa: do GDP and exports determine locational inflows? *Studies in Economics and Econometrics*, 34 (2): 57-66.

Dunning, J.H. 1988. Eclectic paradigm of international production: a restatement and possible extensions. *Journal of International Business Studies*, 19(1): 1-31.

Dunning, J.H. 1995. Reappraising the eclectic paradigm in an age of alliance capitalism. *Journal of International Business Studies*, 26(3): 461-491.

Dunning, J.H. 1998. Location and the multinational enterprise: A neglected factor? *Journal of International Business Studies*, 29(1): 45-66.

- Dunning, J.H. 2000. The eclectic paradigm as an envelope for economic and business theories of MNE activity. *International Business Review*, 9: 163-190.
- Farmer's Weekly. 2010. SA, Zim not safe for investment. <http://www.agriworldsa.com/article-archive/economic-environment/sa-zim-not-safe-for-investments> Date of access: 11 December 2012.
- Greyling, J.C. 2012. The role of the agriculture sector in the South African Economy. <http://scholar.sun.ac.za/handle/10019.1/71713> Date of access: 12 February 2013.
- Hall, R. 2011. Land grabbing in Southern Africa: the many faces of the investor rush. *Review of African Political Economy*, 38(128): 193-214.
- Hall, R. 2012. The next Great trek? South African commercial producers move north. *Journal of Peasant Studies*, 39(3-4): 823-843.
- Hanlon, J. 2012. Minimum wages and exchange rates. *Mozambique News reports and clippings*, 18 May. <http://www.open.ac.uk/technology/mozambique/sites/www.open.ac.uk.technology.mozambique/files/pics/d135458.pdf> Date of access: 15 February 2013.
- Jones, S. & Tarp, F. 2012. Jobs and welfare in Mozambique: Country case study for the 2013 World Development Report. *World Institute for Development Economics Research. United Nations University*. http://siteresources.worldbank.org/EXTNWDR2013/Resources/8258024-1320950747192/8260293-1320956712276/8261091-1348683883703/WDR2013_bp_Jobs_and_Welfare_in_Mozambique.pdf Date of access: 22 April 2013.
- Kassier, E., Cherry, M., Du Toit, I., Aihoon, K. & Le Clus, K. 2003. Advice and assistance in the process of assessing applications for the ministerial determination to pay prescribed minimum wages in the farm worker sector. *Report of the Department of Labour*. Pretoria.

- Kaya, H. & Erden, D. 2008. Firm-specific capabilities and foreign direct investment activities of Turkish manufacturing firms: An empirical study. *Journal of Management development*, 27(7): 671-777.
- Kirsten, J. 1999. The agricultural input industry and the competitiveness of South African agriculture. *Agrekon*, 38(4): 487-512.
- Klein, N. 2012. Real Wage, Labour Productivity, and Employment Trends in South Africa: A Closer Look. International Monetary Fund, Working paper 12/92.
- KPMG. 2009. The challenges of investing in the agriculture sector in Mozambique. <http://www.mcli.co.za/mcli-web/events/2009/30sep09/KPMG.pdf> Date of access: 10 February 2013.
- Kriel, G. 2012. Afrika bied al meer geldmaakkanse. *Landbouweekblad*, 10 Feb, p 22
- Lestrada-Jefferis, J. 2000. Employment trends in Agriculture in South Africa. Stats SA and National Department of Agriculture. <https://www.statssa.gov.za/Publications/EmployTrendsAgri/EmployTrendsAgri.pdf> Date of access: 12 February 2013.
- Macauhub. 17 April 2013. Mozambican Government approves new minimum wage. <http://www.mcauhub.com.mo/en/2013/04/17/mozambican-government-approves-new-minimum-wages/> Date of access: 22 April 2013.
- Makhura, M.N., ed. 2013. History of the Land Bank: Financing agriculture for 100 years. Centurion: Land Bank Public Information Centre.
- Mavie, A. 2012. Agricultural Investment Opportunities in Mozambique. Presentation, June, Maputo, Mozambique.
- Mazvimavi, K., Minde, I., Manussa, S., Tshuma, P. & Murendo, C. 2011. A review of the Agricultural input and output markets development in Mozambique. Paper presented at "Dialogue on Promoting Agricultural Growth in Mozambique", 21 July 2011, Hotel VIP, Maputo, Mozambique.

- Mearns, K.F. 2011. Ekaluka Farmers' Association and the Land Reform Programme: Expectations and Success Factors. *Development Southern Africa*, 28(2): 241-254.
- Meyer, F. 2012. The Role of the National Development Plan – Vision 2030 in Shaping SA Agriculture and Agribusiness. Presentation at Agricultural Business Chamber congress, 5-6 June, Drakensberg, South Africa.
- Meyer, F. 2013. Grain producers' labour cost in South Africa [Telephonic interview]. 6 June, Potchefstroom. (Digital recording).
- Meyer, N.G., Breitenbach, M.C., TI Fényes, T.I. & Jooste, A. 2009. The Economic Rationale for Agricultural Regeneration and Rural Infrastructure Investment in South Africa. No. 200910. University of Pretoria, Department of Economics.
- Nicet-Chenaf, D. & Rougier, E. 2011. New exports matter: Discoveries, foreign direct investment and growth, an empirical assessment for Middle East and North African countries. *The Journal of International Trade & Economic Development*, 20(4): 507-533.
- Nucifora, A.M., & da Silva, L.A.P. 2011. Rapid Growth and Economic Transformation in Mozambique. *Yes, Africa Can: Success Stories from a Dynamic Continent*, 65.
- Pauw, K., Thurlow, J., Uaiene, R. & Mazunda, J. 2012. Agricultural Growth and Poverty in Mozambique: Technical Analysis in Support of the Comprehensive Africa Agriculture Development Program (CAADP). *International Food Policy Research Institute, Nov. 2012. Working paper 2.*
- Pienaar, J. 2013. Agri SA MOZ [Personal interview]. 28 June, Pretoria. (Digital recording).
- Ramaila, M., Mahlangu, S. & du Toit, D. 2011. Agricultural productivity in South Africa: Literature review. *Directorate: Economic Services Production Economics Unit.*

<http://www.nda.agric.za/docs/GenReports/AgricProductivity.pdf> Date of access: 3 May 2013.

Reuters. 2010a. Africa firms launch \$408 mln farmland fund.

<http://www.iol.co.za/business/international/sa-farmers-eye-mozambique-1.876615> Date of access: 6 February 2013.

Reuters. 2010b. SA producers eye Mozambique.

<http://www.iol.co.za/business/international/sa-producers-eye-mozambique-10876615> Date of access: 28 Feb 2013.

Roberts, T. & Antrobus, G.G. 2013. Farmers' perceptions of the impact of legislation on farm workers' wages and working conditions: an Eastern Cape case study. *Agrekon*, 52(1): 40-67.

Sarkar, S. 2004. Mozambique: Creating a Productive Wheel in a Competitive Cart. Nathan Associates.

http://www.tipmoz.com/library/resources/tipmoz_media/cat3_link_1115651308.pdf Date of access: 22 May 2013.

Sharp, L. 2011. SA's labour productivity at 40-year low. *Fin24*, 10 Nov.

<http://www.fin24.com/Economy/SAs-labour-productivity-at-40-year-low-20111110> Date of access: 21 February 2013.

Sherry, S. 2013. Farming Mechanisation: Not an easy switch. *Financial Mail*: 50, 28 June to 3 July.

Simbi, T. & Aliber, M. 2000. Agricultural employment crisis in South Africa. *Trade and Industry Policy Strategies (TIPS) Working Paper 13*. Pretoria: Trade and Industry Policy Strategies.

South Africa. 1997. Basic conditions of employment act no. 75 of 1997. Sectoral determination 13: Farm worker sector, South Africa.

Stats SA (Statistics South Africa). 2013. Quarterly labour force survey: quarter 1, 2013.

<http://www.statssa.gov.za/publications/P0211/P02114thQuarter2012.pdf>

Date of access: 12 May 2013.

Van der Westhuizen, E. 2013a. Farm worker strike in the Western Cape. *Agri Arbeid/Labour*. 13 Feb/March. 19 p.

Van der Westhuizen, E. 2013b. Labour cost and considerations in South Africa [Personal interview]. 28 June, Pretoria. (Digital recording).

Vink, N. 2001. Livelihoods of farm workers in South African agriculture. Unpublished research report. Stellenbosch: Department of Agricultural Economics, University of Stellenbosch

Vink, N. & Hall, R. 2010. Agriculture and land reform in South Africa's first decade of democracy. In: S. Jones & R. Vivian, eds. *South Africa: Economy and Policy 1990-2000*. Manchester: Manchester University Press, p. 644-670.

World Bank Indicators. 2013. Employment in agriculture (% of total employment). <http://data.worldbank.org/indicator/SL.AGR.EMPL.ZS/countries/ZA?display=graph> Date of access: 12 June 2013.

CHAPTER 5

5. ARTICLE 2: THE EFFECT OF HIGHER WAGES ON PRODUCTION COST AND MECHANISATION: A SOUTH AFRICAN MAIZE SECTOR STUDY

5.1 ABSTRACT

The South African labour market was recently characterized by violent and hostile labour strikes by workers demanding exorbitant wage increases. These demands and violent protests overflowed to the agricultural sector, followed by an announcement of a 51% increase in the agricultural minimum wage. Labour costs form an integral part of a producer's production costs and labour increases will therefore directly affect the profitability of producers. The purpose of this study is to investigate the effect that higher wages have on the South African maize sector. Furthermore, to determine whether there is a relationship between higher labour cost and increased mechanisation in the maize sector. Quantitative and qualitative research techniques were utilized to address the research problem. The findings of the study include that the higher wages do not have a significant effect on the maize sector, as it is less dependent on manual labour and therefore more tolerant to wage increases. Furthermore, it was determined that there is a relationship between the maize sector's level of mechanisation and the impact of higher wages. It was found that the maize sector is more developed and mechanized than other agricultural sectors. Notwithstanding, it is recommended that the sector should maintain the investment in mechanisation to increase global competitiveness.

Keywords: Agriculture, Labour cost, Mechanisation, Minimum wages, Production cost

5.2 INTRODUCTION

Minimum wages in South Africa were first implemented in 2002 (Roberts & Antrobus, 2013). However, on 5 February 2013, the minimum wage for farm workers was increased with a staggering 51%, effective from 1 March 2013 (Anon, 2013a). This latest increase in South African agricultural minimum wages is a prominent topic of discussion. A number of questions have been raised about the effect that this increase will have not only on the economy and unemployment, but also the impact thereof on South African producers. Maize producers specifically play a vital role in ensuring food security in South Africa, provided that they can produce profitably over the long term. The intention of this study is to provide information to South African producers and policy-makers by empirically determining whether, based on the cost of labour, it is still financially viable to continue maize production in South Africa. Therefore, this paper will furthermore investigate the trend of increased agricultural mechanisation as a result of significant increases in agricultural wages.

Increased labour cost is not the only type of production cost putting pressure on producers and forcing them to consider alternatives. Instead, it can be viewed as a mixture of total increases in various input costs, such as i) labour, ii) fertilizer, iii) fuel, iv) electricity, and v) seed (Vink & Hall, 2010). Kirsten (1999) concluded that it is essential to evaluate not only production output, but also production input, for both contribute to a producer's competitiveness and add value during the value chain cycle. As a result of significant increases in total production input cost, producers must make structural changes to remain profitable. If, for some reason, structural changes cannot be implemented, consideration must be given to other production practices, such as: i) diversifying into other agricultural markets, ii) exiting farming and seeking other employment, or iii) diversifying or relocating to other countries (Sherry, 2013; Hall, 2012).

In order to define the research objectives, this paper will use production cost data gathered from Grain South Africa (Grain SA, 2013). This data will be used to analyse and interpret trends in the various elements of maize's production cost. This will enable the researcher to determine whether increases in labour cost do indeed impact maize producers' production decisions and therefore the profitability

of the South African maize sector as a whole. It should be noted that different markets in the agricultural sector will react differently to increases in labour cost, depending on the specific market's labour intensity (Meyer, 2013). For purposes of this study, the focus will be on the maize market and the effect of higher labour cost thereon.

This research paper will be structured as follows: the first section will present the literature review and research gap, the theoretical framework and the research problem and research objectives. The second section will discuss the relevant research methodology followed in order to empirically determine the set of research objectives. Section 3 will focus on the agricultural sector in South Africa, paying special attention to the grain market in South Africa and, furthermore, it will focus on increased mechanisation in the South African agricultural sector. Section 4 will empirically investigate labour cost as an element of total production cost. The paper will conclude with findings and final conclusions about the effect of increased labour cost on the South African maize market.

5.2.1 Literature review and research gap

A thorough review of the relevant literature was performed to identify the knowledge gap and to establish the appropriate research method to follow to fill this gap. Statistics South Africa (Stats SA) (2011) annually releases an agricultural survey focusing on expenditure, Gross Domestic Product (GDP) contribution, production levels and agricultural employment. Research conducted by Simbi and Aliber (2000) focused on labour trends in the South African agricultural sector. The main findings of the report include that employment in the commercial farming sector is declining as producers have chosen to shed permanent workers. Kirsten (1999) was concerned about the input industry of South African agriculture and the effect thereof on competitiveness. The research recommended that the agricultural industry should be well integrated to ensure competitiveness in the overall agricultural value chain. A comprehensive report released by the Bureau of Food and Agricultural Policy (BFAP) (2012) focused on the effect of labour increases and the result thereof on four agricultural sectors in the Western Cape area in South Africa. This report forecasted the different net farming income

according to different levels of minimum wages using a model developed by BFAP called the FinSim Model.

Based on the afore-mentioned, it is clear that a knowledge gap of research investigating the effect of higher labour cost focusing on maize producers exists. This topic is, however, relevant especially in light of the significant increase in the latest announced minimum wage for the period 2013 to 2014 and the important role maize production plays in providing food security.

5.2.2 Theoretical framework

This exploratory study will be based on the theoretical concept of value chain analysis developed by Michael Porter. This theory states that activities in the production process add value to the final product for the end user, and that non-value-adding activities should be eliminated (CIMA, 2012a; CIMA, 2012b). For example, research conducted by Ramaila *et al.* (2011) was based on this theoretical concept and found that technology and increased mechanisation can help increase competitiveness and add value.

5.2.3 Problem statement and research objectives

The agricultural sector of South Africa is of great importance; not only can it be viewed as the primary sector responsible for securing food production, it is also an earner of foreign exchange, and a significant provider of employment (Roberts & Antrobus, 2013; Greyling, 2012; Lestrada-Jefferis, 2000). Its importance is further highlighted by the sector's inclusion in the South African Government's Plan, Vision 2030, with the aim of creating employment and alleviating poverty by 2030. This government plan aims to create 1 million jobs in the agricultural sector alone (Anon, 2013b; Meyer, 2012). This goal may be difficult to reach considering factors such as government policies, legislation, and intervention (Vink & Hall, 2010), which will be elaborated upon later on in the study. However, to ensure this goal of creating employment is met, and for food security to be achieved, a maize producer should operate profitably. The following research questions can therefore be asked: Is it still financially viable for maize producers to produce in South Africa based solely on labour considerations? Furthermore, what effect

does the increase in labour cost have on the maize producers' total production cost? Does the increased labour cost lead to increased mechanisation?

In order to successfully answer the before-mentioned research problems, the following objectives were set: i) to determine the financial effect of increased labour cost on maize producers' production cost, in relation to increases in other input cost, and ii) to determine the possible link between higher labour cost and increased mechanisation.

5.3 RESEARCH DESIGN

A mixed method approach was followed to address the research problem, combining quantitative and qualitative research techniques. Data was gathered from Grain SA (2013), a voluntary non-profit organization of South African grain producers established to represent the interest of its members. The data regarding total production cost of maize producers in different regions in South Africa was analysed and interpreted. A weighted average production cost for different regions was calculated, with the regions including: i) the North West Province, ii) The eastern Free State, iii) Mpumalanga, and iv) KwaZulu-Natal (Grain SA, 2013). These regions are considered the key maize-producing areas in South Africa (BFAP, 2013).

Furthermore, data on mechanisation in the agricultural sector was gathered by means of a two-fold process using qualitative techniques. Firstly, a critical review of relevant research published was performed, and secondly, an interview was conducted with Dr Ferdi Meyer, head of the Bureau for Food and Agricultural Policy (BFAP). BFAP performs agricultural research for interested parties, including government and producers, in order to improve decision-making. Meyer is also a grain producer, and is heavily involved in developing government plans for agriculture. He can therefore be regarded as an expert in the field of agriculture. Making use of this relatively small number of participants was a conscious choice of trade-off between quality and quantity of data by the researcher. The basis for this decision is that more reliable data was obtained by interviewing a small number of experts in this field of research than interviewing a large number of inadequate informed producers.

5.4 BACKGROUND

5.4.1 Agricultural minimum wages and the economic effect

As mentioned previously, minimum wages were first implemented in South Africa in 2002 with an effective date of 1 March 2003 (Roberts & Antrobus, 2013). Some of the main reasons for this implementation were to protect farm workers and reduce poverty (Kassier *et al.*, 2003:7). Vink (2001:60) found that most farm workers were living in absolute poverty and therefore government intervention was needed to regulate the living and working conditions of farm workers (Kassier *et al.*, 2003:7). Agriculture, however, is still the lowest paid sector in South Africa. Implementing higher wages in order to uplift poverty, especially in rural areas, is a normal transformation for a developing country, and from a social perspective it can be viewed as a step in the right direction; especially since the government's main aim is to protect workers and uplift their poverty (Meyer, 2013). Higher wages for all may have a positive effect, indirectly contributing to lower crime rates. This theory can only be true if no social problems exist in a country. The reality is that South Africa is a country with a number of social issues that need to be addressed, before significant increases in minimum wages, for mostly unskilled workers, will bring about the possible positive effects. In South Africa, significant increases in the agricultural minimum wage, such as the 51% increase announced by the Minister of Labour, Ms Mildred Oliphant, on 5 February 2013, brought about nearly 2 000 retrenchments (Anon, 2013a). Simulations and calculations performed by BFAP suggest that a further 120 000 jobs are expected to be lost in the agricultural sector of South Africa (Meyer, 2013). Therefore, in effect, more people are now unemployed with no income, creating even more social problems and working against the government's plan, Vision 2030, which aims to reduce poverty and create employment in the agricultural sector of South Africa (Meyer, 2013; Van der Westhuizen, 2013).

5.4.2 South African grain sector

The South African grain sector utilizes 4.3 million hectares of available land in South Africa. Based on the size of the grain sector, it remains a significant provider of employment in South Africa (BFAP, 2012). Grain is classified as being

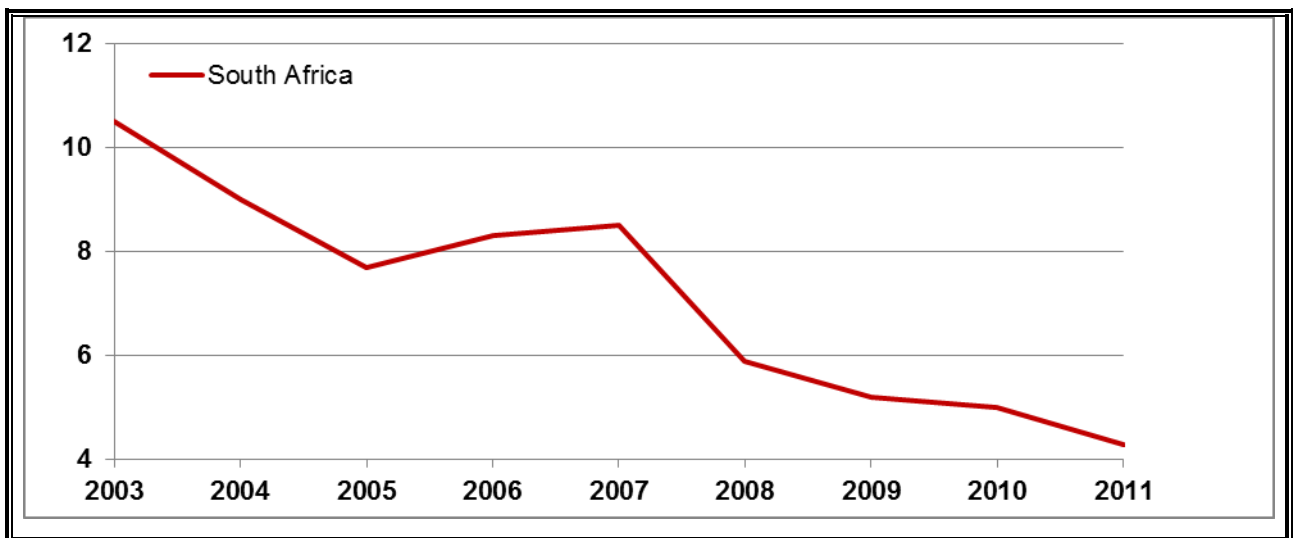
a field crop. The grain-producing sector of South Africa is divided into different types of grain, with maize, and wheat being the two largest contributors. In 2011, maize contributed 47.2% (R15 086 million) of total field crop production in South Africa (DAFF, 2011). There are approximately 9 000 commercial maize producers in South Africa and the maize market provides employment to 150 000 workers (DAFF, 2012a). Wheat, on the other hand, is the second largest contributor to total field crop production in South Africa with a contribution of 9% (R3 850 million) of the total value (DAFF, 2011). In terms of global wheat production, South Africa is ranked 37th. It is estimated that there are approximately 3 800 to 4 000 wheat producers in South Africa. The wheat market provides employment to approximately 28 000 people in South Africa (DAFF, 2012b). With global technology changing constantly, the maize market has already undergone significant changes in their production process with the implementation of, for example, technologically-advanced tractors replacing manual labourers. The maize sector in South Africa has therefore already started to implement structural changes, becoming less dependent on manual labourers (Meyer, 2013; BFAP, 2012). Furthermore, a sector's labour intensity determines its exposure to volatility when wages are changed.

5.4.3 Mechanisation vs. higher wages with special reference to the maize sector

For the South African agricultural sector to remain competitive and compete against subsidized producers globally, mechanisation is a necessity. Producers should consider moving away from labour-intensive farming by implementing structural changes (Sherry, 2013). Recent research conducted by Ramaila *et al.* (2011) indicated that technological improvement can lead to increased agricultural productivity. Furthermore, mechanisation, such as technologically-advanced tractors, can substitute manual labourers needed, reduce harvesting time and cut production cost (BFAP, 2012). However, not all sectors are able to implement structural changes to the same extent and mechanisation can be a costly process; however, the value that can be added to the value chain is endless. A producer has to evaluate the increase in production cost as result of increased minimum wages against the capital outlay and costs of restructuring business processes.

Since drastic increases in labour costs are resulting in producers not being able to cover operating expenses, producers are considering alternatives, including: i) diversifying operations in order to spread risk, ii) diversifying through producing alternate agricultural products less labour intensive, iii) substituting numerous unskilled workers with more, skilled workers, and iv) mechanisation (BFAP, 2012; Hall, 2012). BFAP (2012) stated that mechanisation should not be seen as a threat to employment, but rather as an opportunity to increase the value added per farm worker. The South African agricultural sector is still relatively labour intensive, with dependency on manual labourers varying according to different sub-sectors. An increase in mechanisation in South Africa is, however, evident with sales figures of mechanical implements from 2003 to 2012 increasing from 3 200 to 7 800 units sold per annum (Sherry, 2013; Anon, 2013a). Part of this increase in sales can be directly contributed to significant increases in labour cost (Meyer, 2013; Sherry, 2013; Anon, 2013a; BFAP, 2012). However, increased wages are not the only reason for this increase in sales; another contributor is the agricultural commodity price boom from 2007 to 2012. Agricultural commodity prices nearly doubled during this period, resulting in the net farming income of producers increasing significantly. With the available surplus funds, producers increased investments into capital equipment (Meyer, 2013). Larger farms that invested in technology leading to increased mechanisation and economies of scale, are currently able to produce at lower production costs. Graph 1 illustrates the declining rate of employment by the agricultural sector in South Africa over the period 2003 to 2012. This trend can also be an indication of the South African agricultural sector becoming more mechanised by substituting manual labourers with increased mechanisation.

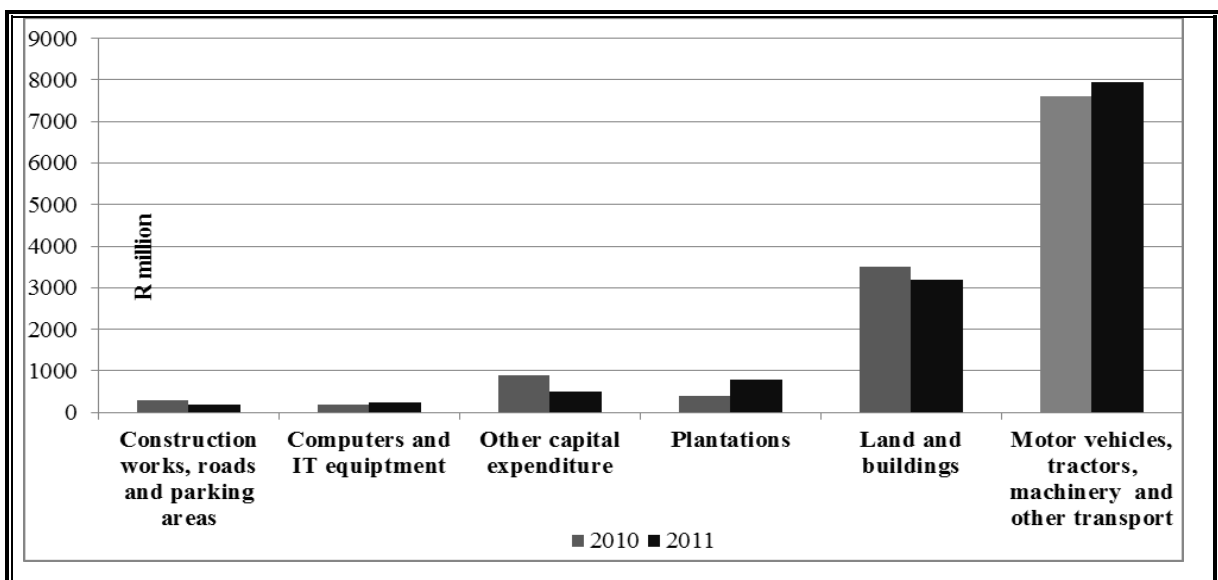
Graph 5.1: Employment in the agricultural sector of South Africa: 2003 to 2012



Source: World Bank (2013)

Graph 5.2 illustrates the capital expenditure of commercial producers for the period 2010 to 2011. Although two years' data is not sufficient to determine a trend, it is evident that expenditure on motor vehicles, tractors, machinery and other transport represented the biggest portion.

Graph 5.2: Capital expenditure by commercial farming sector: 2010 to 2011



Source: Stats SA (2011) adapted

The extent of the effect of higher labour cost on production cost will depend largely on the percentage that labour represents of total production cost. However, sectors that have already undergone structural changes and therefore are less dependent on manual labourers will be more tolerant to increases in the labour cost.

Mechanisation was first introduced in the maize production process, while the harvest process was more reliant on manual labouring. However, with technological developments over the last number of years, the harvesting process is also now moving towards increased mechanisation (BFAP, 2012). Furthermore, when compared to other sectors, the maize sector is more mechanised and able to implement structural changes than other sectors such as the vegetable and fruit sectors (Meyer, 2013). Currently, labour represents approximately 7.65% of total production cost on an average grain-producing farm, compared to a 34% average on an apple and pear farm (Meyer, 2013; BFAP, 2012). Mechanised production methods are able to add more value to the value chain and can in effect eliminate cost disadvantages created through increased labour cost (Ramaila *et al.*, 2011). This is in contrast to labour-intensive sectors that are more negatively influenced by higher wages and therefore prone to retrench workers (BFAP, 2012).

5.5 ANALYSIS OF LABOUR COST AS PART OF PRODUCTION COST

Labour is only one element of a number of production cost items and, in South Africa, this labour cost is heavily influenced by the agricultural minimum wage. However, an increase in statutory labour or minimum wage rates is not directly correlated with the percentage increase of labour's portion of total production cost. For example, a 10% increase in the agricultural minimum wage rate may only lead to a 4% increase in labour cost as a percentage of total production cost (Meyer, 2013). This imperfect relationship may be attributed to: i) producers saving costs by reducing their workforce through retrenchments resulting in labour representing a smaller percentage of total production cost, and ii) a sector's level of dependence on manual labour, as a highly dependent sector, will be more influenced by higher wages (Meyer, 2013; BFAP, 2012).

The open question of this study for the core audience of South African producers and policy-makers is to determine whether the effect of higher wages negatively influenced the financial viability of the maize sector of South Africa, focusing specifically on the production data of maize in the key producing areas. As total production cost has increased due to increases in the various production cost items, one can ask: “What percentage of the total increase in production cost can be directly attributed to higher wages?” This question will be addressed by analysing the different factors that led to higher production cost for South African maize producers. However, the literature indicates that significant increases in labour are not the only element contributing to higher production cost, which in turn, negatively affects the profitability of producers. It should also be noted that some variables influencing a producer’s profitability cannot be controlled, including: i) weather conditions, and ii) commodity prices.

Variable maize production cost (excluding fixed production cost) consists of the following items: i) seed, ii) fertilizer, iii) weed control cost, iv) pest control cost, v) fuel, vi) seasonal workers, vii) permanent workers, and viii) a combination of smaller items (Grain SA, 2013; DAFF, 2012c). These main production cost elements will be used to conduct the analysis.

Certain seasons in the maize production process require increased labour, which is when seasonal workers are utilized. These seasonal workers are paid the same rate as permanent workers, which is regarded as a criticism against a fixed minimum wage rate for all farm workers (Meyer, 2013).

The data obtained from Grain SA (2013) was in the form of total maize production cost per hectare. The total increase in production cost per hectare from year to year was analysed and interpreted based on the various increases in the above-mentioned main production cost elements per hectare. Table 5.1 presents the various variable production cost and contribution per hectare for maize from 2002 to 2013, for the key producing areas in South Africa (North West Province, eastern Free State, Mpumalanga, and KwaZulu-Natal). The 2013 data are projections as provided by Grain SA (2013). Minimum wages were first implemented in South Africa in 2002 (Roberts & Antrobus, 2013).

Table 5.1: Variable production cost of maize per hectare: 2002 to 2013

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Income/ha	5376,88	3890,58	4347,9	3105,27	5400,72	5886,27	8926,95	8027,40	5062,89	7837,88	8599,23	12437,50
Production cost/ variable cost: RAND	2572,59	2812,48	2925,42	2951,35	3251,58	3890,02	4419,11	5702,45	4278,78	4604,34	6576,67	9027,40
Seed	209,21	217,38	294,36	332,57	341,17	456,63	431,96	599,63	572,67	726,65	1268,00	1170,54
Fertilizer	548,06	765,81	730,41	753,95	788,98	1020,17	1342,87	1903,21	1586,22	1754,72	2705,00	1170,54
Weed control	132,02	165,64	162,79	155,18	184,48	259,38	236,41	485,79	371,50	415,30	582,00	3098,83
Pest control	60,76	96,57	86,71	95,13	64,98	45,00	64,40	0,00	115,00	111,75	335,00	634,31
Fuel	365,39	322,64	334,42	384,58	477,38	505,21	652,09	627,29	572,54	642,48	727,00	297,81
Permanent workers	207,48	210,03	236,36	240,74	287,99	277,11	296,08	320,00	334,46	332,81	398,58	909,47
Seasonal workers	27,87	29,5	17,03	23,41	30,05	35,47	35,47	45,50	51,31	57,25	70,00	577,83
Packaging materials	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,28	0,25	0,25	0,00	0,00
Other combined	1021,8	1004,91	1063,34	965,79	1076,54	1291,04	1359,83	1720,75	674,85	563,14	491,09	2338,61
Contribution/ha	2804,30	1078,10	1422,49	153,92	2149,14	1996,26	4507,84	2324,95	784,11	3233,53	2022,56	3410,06

Source: Grain SA, 2013

Table 5.2 indicates the overall real growth from 2002 to 2013 in the income, production cost elements and contribution per hectare.

Table 5.2: Annual average growth rate in variable maize production cost elements from 2002 to 2013

	Growth rate
Income/ha	7.92%
Production cost / variable cost:	12.09%
Seed	16.95%
Fertilizer	17.06%
Weed control	15.34%
Pest control	15.55%
Fuel	8.64%
Permanent workers	9.76%
Seasonal workers (2003 to 2012)	9.65%
Other combined	7.82%
Contribution/ha	7.82%

Source: Own calculations based on data obtained from Grain SA (2013)

Table 5.3 illustrates the annual percentage change for the income, production cost elements and contribution per hectare. There has been a 19.76% and 22.27% increase from 2011 to 2012 in the cost of permanent and seasonal workers, respectively. The 2013 projection data anticipates a 44.97% increase in the labour cost of permanent workers; this is due to the 51% increase in agricultural minimum wages for the period 2013 to 2014. This increase of 44.97% is therefore slightly lower than the percentage increase in the fixed minimum wage rate for the corresponding period. However, significant increases in other production cost elements are also evident from 2003 to 2013, with pest control, seed and fertilizer all showing increases in excess of 50%.

Table 5.3: Annual percentage (%) change in variable maize production cost: 2002 to 2013

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Income/ha	-27.64	11.75	-28.58	73.92	65.29	51.66	-10.08	-36.93	54.81	9.71	44.63
Production cost/ variable cost:	9.33	4.02	0.89	10.17	19.63	13.60	29.04	-24.97	7.61	42.84	37.26
Seed	3.91	35.41	12.98	2.59	33.84	-5.40	38.82	-4.50	26.89	74.50	-7.69
Fertilizer	39.73	-4.62	3.22	4.65	29.30	31.63	41.73	-16.66	10.62	54.16	14.53
Weed control	25.47	-1.72	-4.68	18.88	40.60	-8.86	105.49	-23.53	11.79	40.14	8.99
Pest control	58.92	-10.20	9.70	-31.69	-30.75	43.11	-100.00	0.00	-2.83	199.78	-11.1
Fuel	-11.70	3.65	15.00	24.13	5.83	29.07	-3.80	-8.73	12.22	13.16	25.1
Permanent workers	1.23	12.53	1.86	19.62	-3.78	6.85	8.08	4.52	-0.49	19.76	44.97
Seasonal workers	5.86	-42.29	37.52	28.34	18.04	-0.01	28.29	12.77	11.58	22.27	-
Other combined	-1.65	5.81	-9.17	11.47	19.92	5.33	26.54	-60.78	-16.55	-12.79	376.21
Contribution/ha	-61.56	31.94	-89.18	1296.29	134.37	125.815	-39.1175	-11.964	47.202	-33.123	68.6

Source: Own calculations based on data obtained from Grain SA (2013)

This data was further analysed with Table 5.4 presenting the results of the weights of the various increases in production cost represented of the total increase in production cost. For example, the increase of 37.26% in 2013 was further analysed to determine the percentage each production cost element contributed (as a % of 100%) to the total increase in production cost per hectare. This was done to determine what portion of the total increase in production cost was represented by labour cost.

Table 5.4: Percentage contribution per production cost element: 2002 to 2013

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Production cost/ variable cost:	100	100	100	100	100	100	100	100	100	100	100
Seed	8.13	7.73	10.06	10.49	11.74	9.77	10.52	13.38	15.78	19.28	12.97
Fertilizer	21.30	27.23	24.97	24.26	26.23	30.39	33.38	37.07	38.11	41.13	34.33
Weed control	5.13	5.89	5.56	5.67	6.67	5.35	8.52	8.68	9.02	8.85	7.03
Pest control	2.36	3.43	2.96	2.00	1.16	1.46	0.00	2.69	2.43	5.09	3.3
Fuel	14.20	11.47	11.43	14.68	12.99	14.76	11.00	13.38	13.95	11.05	10.07
Permanent workers	8.07	7.47	8.08	8.86	7.12	6.70	5.61	7.82	7.23	6.06	6.4
Seasonal workers	1.08	1.05	0.58	0.92	0.91	0.80	0.80	1.20	1.24	1.06	-
Other combined	39.72	35.73	36.35	33.11	33.19	30.77	30.18	15.77	12.23	7.47	25.91

Source: Own calculations based on data obtained from Grain SA (2013)

As is evident from the data in Table 5.4, the 42.84% and 37.26% increase in the production cost from 2011 to 2012 and 2012 to 2013 respectively, is mostly due to a 41.13% and 34.33% increase in fertilizer for both 2012 and 2013. Labour cost (permanent workers and seasonal workers) contributed roughly 6% to the total increase. The two elements mostly contributing to the annual production cost increase are the other combined elements and the increase in fertilizer. The increase in labour cost as a percentage of total production cost cannot therefore be regarded as significant. A possible reason may be that the maize sector in South Africa is relatively not heavily reliant on manual labour and therefore the higher minimum wages will not significantly influence the profitability of the sector.

In order to investigate the influence of the minimum wage increases on labour as percentage of maize production cost, a comparison was drawn between the latter and the increase in agricultural minimum wages.

Table 5.5 indicates the monthly agricultural minimum wage in South Africa from 2003 to 2013 compared to the annual increase or decrease of the cost of permanent and seasonal workers included in the total variable production cost of maize. Furthermore, Table 5.5 includes the annual average of the South African Producer Price Index (PPI) for commodities in domestic output. The increase/decrease in minimum wage and labour as part of variable production cost is compared to the PPI as it is used as an indicator of inflation or deflation for locally-produced commodities (Stats SA, 2013).

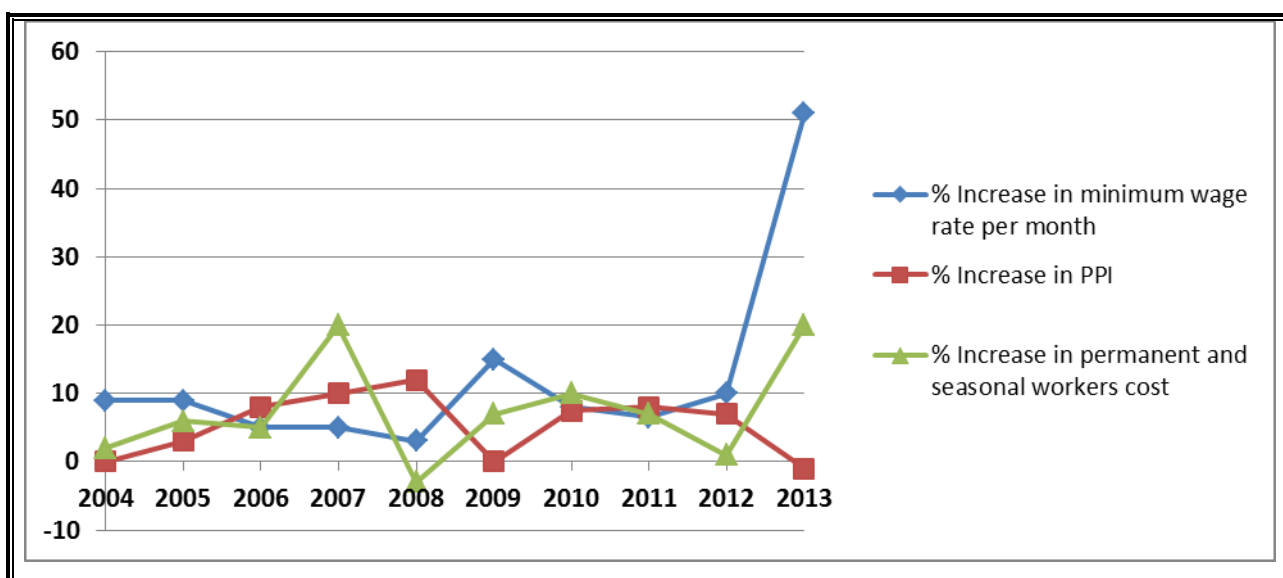
Table 5.5: Agricultural minimum wage rate compared to % increase in labour as part of variable production cost

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Minimum wage rate per month	800	871	949	994	1041	1073	1231	1316	1375	1503	2274
% Increase		8.88%	8.96%	4.74%	4.73%	3.07%	14.73%	6.90%	4.48%	9.31%	51.30%
% Increase in permanent and seasonal workers cost		1.78%	5.78%	4.25%	20.40%	-1.72%	6.07%	10.24%	5.55%	1.11%	20.13%
% Increase in PPI		0.60%	3.10%	7.60%	10.90%	14.20%	-0.10%	6.00%	8.40%	6.20%	6.6% (July)

Source: Own calculations from data obtained from Stats SA (2013); South Africa (2013); South Africa (2012); South Africa (2009); South Africa (2006); South Africa (2002); and DPRU (2010)

From the data analysed in Table 5.5, it can be gathered that the agricultural minimum wage rate increased from 2012 to 2013 with 51.30%, while the percentage increase in permanent and seasonal workers' cost, i.e. labour cost, was only 20.13%. These increases are significantly higher than the PPI increase of 6.6% (refer to Graph 5.3). A possible reason is that the latest increase in minimum wage is only effective from 1 March 2013 and will take time to filter through to a PPI increase. The average annual increase in minimum wages over the past 10 years (as per data in Table 5.5) was calculated as 11.74%. If such a trend continues, then evidence suggests that the increase in the minimum wage rate is much higher than the resultant increase or decrease that labour contributed to the increase or decrease in total variable production cost per hectare (refer to Graph 5.3). Considering labour percentage as part of total production cost, the highest percentage labour formed of total production cost was 9.78%, which is much lower than the astonishing annual average increase of 11.74% (refer to Table 5.4).

Graph 5.3: Agricultural minimum wage rate compared to % increase in labour as part of variable maize production cost



Source: Own calculations from data obtained from Stats SA (2013); South Africa (2013); South Africa (2012); South Africa (2009); South Africa (2006); South Africa (2002); and DPRU (2010)

5.6 FINDINGS AND CONCLUSIONS

The research objectives of the study was firstly to determine the financial effect of increased labour cost on maize producers' production cost in relation to increases in other input cost, and secondly, to determine the possible link between higher labour cost and increased mechanisation. The study started off by analysing the various variable maize production cost elements per hectare from 2002 to 2013 (refer to Table 5.1), followed by a calculation of the annual average growth rate of each element (refer to Table 5.2). The data in Table 5.2 indicated that the annual average growth rate from 2002 to 2013 was 9.76% and 9.65% for permanent workers and seasonal workers, respectively. Next, the annual percentage change in each cost element was determined in Table 5.3, followed by a further analysis presenting the results of the weight the various increases in production cost represented of the total increase in production cost. Finally, Table 5.5 compared the increase in agricultural minimum wages to i) the annual increase or decrease of the cost of permanent and seasonal workers included in the total variable

production cost of maize, and ii) the annual average South African PPI increase. It was found that although the annual increase in agricultural minimum wages over the last decade was 11.74%, labour as a percentage of maize production cost did not increase at the same rate. It can therefore be concluded that the increase in minimum wages did not have a significant financial effect on maize producers' production cost. It was furthermore found that the main cause for the increased production cost of South African maize producers relates to increases in other production inputs such as fertilizer and other combined items.

With regard to the second research objective, the findings suggest that there is a definite relationship between a sector's level of mechanisation and the impact of higher wages, i.e. a labour intensive sector will be more negatively affected by rising labour costs compared to more mechanized sectors. When considering the South African maize sector, it can be concluded based on calculations performed combined with interviews conducted and literature reviewed that the maize sector of South Africa is more developed and mechanized compared to other agricultural sectors. However, it is recommended that the maize sector of South Africa should maintain the investment in structural changes and move from labour-intensive production towards increased mechanisation to increase global competitiveness. This supports the value chain analysis theory that activities in the production process such as mechanisation add value to the final product for the end user, and that non-value-adding activities should be eliminated. Mechanisation, however, can be a costly process and the cost thereof will have to be weighed up against the cost of higher labour. Through increased mechanisation, the negative effects of increased wages can be countered to a certain degree, but sectors not able to implement structural changes to increase mechanisation will be affected the most by drastic increases in the minimum wage rate.

Areas for further research include the expansion of this study by investigating the impact of higher labour cost on other agricultural sectors, such as the wine and certain vegetable sectors.

5.7 REFERENCES

Anon. (2013a). Farm workers lose jobs after wage hike.

<http://www.bizcommunity.com/Article/196/475/88918.html> Date of access: 5 February 2013.

Anon. (2013b). Agri SA states position on minimum wage.

<http://www.bizcommunity.com/Article/196/358/88738.html> Date of access: 5 February 2013.

Babbie, E. & Mouton, J. (2001). The practice of social research. *South African edition*. Oxford: Oxford University Press . 674 p.

BFAP (Bureau for Food and Agricultural Policy). 2013. BFAP Baseline Agricultural outlook, 2012 – 2021.

http://www.bfap.co.za/documents/baselines/BFAP_Baseline_2012.pdf Date of access: 20 July 2013.

BFAP (Bureau for Food and Agricultural Policy). (2012). Farm sectoral determinations: An analysis of agricultural wages in South Africa.

<http://bfap.co.za/documents/research%20reports/BFAP%20farm%20sector%20determination%20report%20draft%202017%20Dec.PDF> Date of access: 15 April 2013.

CIMA (Chartered Institute of Management Accountants). (2012a). CIMA official study text: Paper E1, Enterprise Operations. Oxford: Elsevier. 484p.

CIMA (Chartered Institute of Management Accountants). (2012b). CIMA official study text: Paper E3, Enterprise Strategy. BPP Learning Media. 574p.

DAFF (Department of Agriculture, Fisheries and Forestry). (2012a). Maize market value chain profile.

<http://www.nda.agric.za/docs/AMCP/MaizeMVCP2011.pdf> Date of access: 22 May 2013.

- DAFF (Department of Agriculture, Fisheries and Forestry). (2012b). Wheat market value chain profile. <http://www.nda.agric.za/docs/AMCP/WheatMVCP2011.pdf> Date of access: 22 May 2013.
- DAFF (Department of Agriculture, Forestry and Fisheries). (2012c). Economic review of the South African Agriculture. <http://www.daff.gov.za/docs/statsinfo/EcoReview2012.pdf> Date of access: 9 April 2013.
- DAFF (Department of Agriculture, Fisheries and Forestry). (2011). Trends in the Agricultural Sector. <http://www.nda.agric.za/docs/statsinfo/Trends2011.pdf> Date of access: 9 April 2013.
- DPRU (Development Policy Research Unit). (2010). Addressing the Plight of Vulnerable Workers: The Role of Sectoral Determinations. <http://www.labour.gov.za/downloads/documents/useful-documents/basic-conditions-of-employment/The%20role%20of%20Sectoral%20Determinations.pdf> Date of access: 5 Aug 2013.
- Grain SA. (petru@grainsa.co.za) 8 June 2013. "Versoek om inligting", lehanrisaayman@gmail.com
- Greyling. J.C. (2012). The role of the agricultural sector in the South African Economy. <http://scholar.sun.ac.za/handle/10019.1/71713> Date of access: 12 Feb. 2013.
- Hall, R. (2012). The next Great trek? South African commercial producers move north. *Journal of Peasant Studies*, 39(3-4):823-843.
- Kassier, E., Cherry, M., Du Toit, I., Aihoon, K. & Le Clus, K. (2003). Advice and assistance in the process of assessing applications for the ministerial determination to pay prescribed minimum wages in the farm worker sector. Report of the Department of Labour. Pretoria.

- Kirsten, J. (1999). The agricultural input industry and the competitiveness of South African agriculture. *Agrekon*, 38(4):487-512.
- Kothari, C.R. (2009). *Research Methodology: Methods and Techniques*. 2nd ed. India, New Delhi: New Age International Publishers. 1-8 p.
- Lestrada-Jefferis, J. (2000). Employment trends in Agriculture in South Africa. <https://www.statssa.gov.za/Publications/EmployTrendsAgri/EmployTrendsAgri.pdf> Date of access: 12 Feb. 2013.
- Meyer, F. (2012). The Role of the National Development Plan – Vision 2030 in Shaping SA Agriculture and Agribusiness. Presentation at Agricultural Business Chamber congress, 5-6 June, Drakensberg, South Africa.
- Meyer, F. (2013). Grain producers' labour cost in South Africa [Telephonic interview]. 6 June, Potchefstroom. (Digital recording).
- Ramaila, M., Mahlangu, S. & du Toit, D. (2011). Agricultural productivity in South Africa: Literature review. *Directorate: Economic Services Production Economics Unit*.
<http://www.nda.agric.za/docs/GenReports/AgriProductivity.pdf> Date of access: 3 May 2013.
- Roberts, T. & Antrobus, G.G. (2013). Farmers' perceptions of the impact of legislation on farm workers' wages and working conditions: an Eastern Cape case study. *Agrekon*, 52:(1): 40-67
- Sherry, S. (2013). Farming Mechanization: Not an easy switch. *Financial Mail*. 50, 28 June – 3 July.
- Simbi, T. & Aliber, M. (2000). Agricultural employment crisis in South Africa. *Trade and Industry Policy Strategies (TIPS) Working Paper 13*. Pretoria: Trade and Industry Policy Strategies.

South Africa. (2013). Basic conditions of Employment Act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa. *Government Gazette*, 36115, 5 Feb.

South Africa. (2012). Basic conditions of employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa. *Government Gazette*, 35067, 24 Feb.

South Africa. (2009). Basic conditions of Employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa. *Government Gazette*, 31888, 13 Feb.

South Africa. (2006). Basic conditions of Employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa. *Government Gazette*, 28518, 17 Feb.

South Africa. (2002). Basic conditions of Employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa. *Government Gazette*, 24114, 2 Dec.

Stats SA (Statistics South Africa). (2011). Agricultural survey 2011 (Preliminary). http://harvestchoice.org/sites/default/files/downloads/publications/RSA_2011_Survey.pdf Date of access: 15 May 2013.

Stats SA (Statistics South Africa). (2013). Producer Price Index (PPI). <http://www.statssa.gov.za/publications/statsdownload.asp?PPN=P0142.1&SCH=4316> Date of access: 20 Sept 2013.

Van der Westhuizen, E. (2013). Labour cost and considerations in South Africa [Personal interview]. 28 June, Pretoria. (Digital recording).

Vink, N. (2001). Livelihoods of farm workers in South African agriculture. Unpublished research report. Stellenbosch: Department of Agricultural Economics, University of Stellenbosch.

Vink, N. & Hall, R. (2010). Agriculture and land reform in South Africa's first decade of democracy. In: S. Jones & R. Vivian, eds. South Africa: Economy and Policy 1990-2000. Manchester: Manchester University Press, p 644-670.

World Bank. (2013). Employment in agriculture (% of total employment). <http://data.worldbank.org/indicator/SL.AGR.EMPL.ZS/countries/ZA?display=graph> Date of access: 28 May 2013.

CHAPTER 6

6. CONCLUSION

6.1 INTRODUCTION

The aim of this chapter is to revisit the research objectives set in Chapter 1 (refer page 9) by summarising and concluding the findings based on these objectives. The researcher will present each objective followed by a summary and conclusion of the related findings. A comprehensive summary of the research will be provided followed by the limitations of the research. Finally, the areas for possible future research will be presented.

The main objective of the study was to determine whether it is still financially viable for grain producers to produce in South Africa based solely on labour considerations. The main objective was supported by secondary objectives and each of these secondary objectives will now be discussed.

6.1.1 Determine and compare the minimum wage for farm workers in South Africa and Mozambique

This objective was addressed in both Chapter 3, page 58 and Chapter 4, page 83. When comparing the agricultural minimum wage for South Africa and Mozambique, it was found that labour cost in Mozambique is much lower than in South Africa. The South African minimum wage rate was more than double the Mozambican rate when converted to a base currency.

However, although the cost of labour in Mozambique is lower and can possibly lead to a cost advantage, other factors such as the stability and productivity of the labour market still need to be considered in order to formulate a valid conclusion and recommendation.

6.1.2 Analyse the stability of the labour market

The South African labour market is frequently in turmoil with various sectors experiencing violent and hostile labour wage strikes. These strikes influence the economy as a whole and, furthermore, South Africa's image to attract foreign investment is negatively affected.

Considering that South Africa already has a high unemployment rate, the agricultural labour market suffered 2 000 retrenchments after the 2013/2014 minimum wage rate announcement. If this trend continues, the Government plan – Vision 2030, with an aim to create 1 million jobs in agriculture, will not be reached. It can therefore be concluded that the South African labour market is experiencing periods of instability. On the other hand, the Mozambican agricultural labour market seems stable.

6.1.3 Determine whether higher wages lead to increased productivity per farm worker

This objective was dealt with in Chapter 3, page 29. Labour productivity has shown a global decline over the last few years, reaching an ultimate low in 2011 and is still declining. The agricultural sector is characterised by making use of fewer skilled workers. It is generally accepted that higher wages should lead to increased productivity, although this is not the case in South Africa. The current rate of agricultural minimum wages in South Africa implicates a much higher level of productivity per worker. This can also be seen as the reason why producers are currently considering employing more skilled workers given a fixed minimum wage for all.

Labour productivity in Mozambique is very low when compared to South Africa. However, the wage rate paid per worker can be viewed as being better correlated with the level of productivity per farm worker. It seems a possibility that a producer can employ more less-skilled workers in Mozambique to compensate for the lack in productivity.

6.1.4 Determine the financial effect of increased labour cost on maize producers' production cost in relation to increases in other input cost

The effect that higher labour cost contributed to the total increase in production cost was evaluated in Chapter 5. The production cost data for maize producers from the key maize-producing areas in South Africa for the period 2002 to 2013 was analysed. It was found that labour as production cost item did not increase at the same rate as the minimum wage rate increase. The annual average growth rate from 2002 to 2013 was 9.76%, and 9.65% for permanent workers and seasonal workers, respectively, while the annual increase in agricultural minimum wages over the last decade was 11.74%. The increase in maize production costs can be attributed to increases in the price of fertilizer and other combined items. The latest increase in agricultural minimum wages of 51% will, according to estimated data, only lead to a 44% increase in labour as production cost (refer Table 5.3, page 95). Labour will still not be the largest contributor towards total production cost for the 2013 agricultural year (refer Table 5.4, page 96).

6.1.5 Determine the possible link between higher labour cost and increased mechanisation

The possibility of a link between higher labour cost and the level of mechanisation of the maize sector was investigated in Chapter 5. The evidence suggests that there is a definite relationship between a sector's level of mechanisation and the impact of higher wages, i.e. a labour-intensive sector will be more negatively influenced by rising labour costs compared to more mechanised sectors. When considering the South African maize sector, it was concluded that the maize sector of South Africa is more developed and mechanised compared to other agricultural sectors and the Mozambican grain and maize sector. However, it is recommended that the maize sector of South Africa should strive to maintain the investment in structural changes and move from labour-intensive production towards increased mechanisation. This will assist in increasing global competitiveness and to a certain degree minimise the negative effect of increased wages.

The focus on increased mechanisation supports the value chain analysis theory that activities in the production process such as mechanisation add value to the final product for the end user, and that non-value-adding activities should be eliminated. Mechanisation, however, can be a costly process and the cost thereof will have to be weighed up against the cost of higher labour. Sectors not able to implement structural changes to increase mechanisation will be affected most by drastic increases in the minimum wage rate.

6.2 DECISION MATRIX

Based on evidence produced during this study, the following decision matrix was developed in order to assist producers relocating or diversifying agricultural activities. This matrix is not limited to grain producers and the grain or maize sector. The labour cost/labour productivity decision matrix will now be illustrated and discussed.

Figure 6.1: Labour cost/labour productivity decision matrix

		Cost of labour	
		High	Low
Labour Productivity	High	Trade off	Relocate (Ideal)
	Low	Do not invest	Diversify based on labour savings

Source: Own development (2013)

Trade off: The cost of labour as well as the productivity of the workforce is high in this country and therefore a trade-off will have to be made. This decision will furthermore be influenced the level of development in the specific industry. If the industry is labour intensive, the high cost of labour may be in excess of the possible benefits to be gained through a highly productive workforce.

Do not invest: In this country, there is a high cost of labour combined with an unproductive workforce. Theory suggests that no advantages are to be gained.

Relocate: This is the ideal scenario. A country in which the cost of labour is low, but the workforce has a high level of productivity. It would be beneficial to relocate agricultural activities and invest in this country's agricultural sector. However, other factors such as infrastructure development and the efficiency of the market for the product will still need to be considered.

Diversify based on labour savings: In this scenario, the cost of labour is low and may indicate possible cost advantages, but the productivity of the workforce is also low. Mozambique is an example of such a country. Here, other factors such as the lack of infrastructure development and an efficient market will be determining factors. If other factors are positive, possible cost benefits can be gained through the cheaper cost of labour. It would make better business sense to diversify some part of your agricultural activities to this country, but not relocate all activities.

6.3 RESEARCH SUMMARY AND RECOMMENDATIONS

The main research objective of the study was to determine whether, based on the cost of labour, it is still financially viable for grain producers to produce in South Africa. When considering all factors discussed during the course of this study, it can be concluded that it is still financially viable for grain producers based on the cost of labour.

Sarkar (2004:7) indicated that the cost of labour of the host country must be carefully examined, but this can only be true if the specific sector is still primarily dependent on manual labourers. When considering relocating or diversifying to

Mozambique, one may be prone to conclude that it is financially more viable to produce in Mozambique based solely on the cost of labour. However, the low productivity, the lack of an established market and the lack of infrastructure will have to be considered. The cost saving as result of cheaper labour therefore needs to be weighed up against the cost of lost productivity of workers and various other costs such as infrastructure development and risk of adverse selling price movements due to selling on an unregulated market.

In contrast to Mozambique, the South African grain sector is already developed in terms of mechanisation and this reduces the effect of increased minimum wages on total production cost.

This study therefore concludes that, despite higher agricultural wages in South Africa and unstable labour conditions, it is still more financially viable for grain producers in South Africa. This conclusion is only evident for the grain sector, and conclusions may differ for other sectors.

6.4 RESEARCH CONTRIBUTION

The main research contribution of this study is that it was demonstrated using relevant qualitative and quantitative research techniques that, in spite of higher labour cost in South Africa, it is still financially viable for grain producers to produce in South Africa. This is preferential to relocating grain-producing activities to other countries with cheaper labour costs. It also proved that although other research indicated that when considering relocating or diversifying the labour cost of the host country needs to be carefully examined because it is a determining factor, this conclusion can only be true if the sector is still primarily dependant on manual labourers. If not, other input elements contributing most to production cost will need to be analysed.

The labour cost/labour productivity decision matrix can assist grain producers as well as other producers in their decision to relocate or diversify agricultural activities to Mozambique. Barriers to entry into the Mozambican market were also identified. These barriers need to be carefully analysed and assessed to

determine whether it can be overcome. These barriers can be of great importance to all producers.

6.5 RESEARCH LIMITATIONS

Agricultural production costs for Mozambique are not readily available, which limited the researcher's ability to perform comparative calculations between South Africa and Mozambique.

The study focused primarily on evaluating the effect of higher labour costs in the grain market. The findings of the study can therefore not be generalised to include other sectors. This is an area for further study. Furthermore, this study focused on Mozambique, and again the findings cannot be generalised for other African countries.

It should be duly noted that, as with all descriptive research studies, the researcher is mainly reporting on something that has happened or is happening, while having no control over some variables. The term *ex post facto research* is applicable here.

6.6 FUTURE RESEARCH OPPORTUNITIES

As highlighted by the research limitations, the following future research opportunities exist:

- evaluating the effect of higher labour cost on other sectors;
- extending this study to include other African countries; and
- evaluating the effect of increases in other production cost elements such as material (seed and fertilizer) and overhead cost (packaging material) on the profitability of producers.

7. REFERENCES

- African Development Bank Group. 2011. Republic of Mozambique: Country Strategy paper 2011- 2015.
<http://www.afdb.org/fileadmin/uploads/afdb/Documents/Policy-Documents/Mozambique%20-%202011-15%20CSP.pdf> Date of access: 22 May 2013.
- African Economic Outlook. 2012. Mozambique 2012.
<http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Mozambique%20Full%20PDF%20Country%20Note.pdf> Date of access: 22 May 2013.
- AgriSA. 2013. Mission. <http://www.agrisa.co.za/> Date of access: 27 February 2013
- AgriSETA. 2010. Sector analysis Agriculture. *Prepared for submission to the Department of Higher Education and Training.*
http://www.agriseta.co.za/downloads/news/AGRISETA_Sector_Analysis_290610-version_2.pdf Date of access: 11 May 2013.
- Anon. 2011. South Africa and Mozambique: Partners in commercial agriculture.
<http://www.agrisamoz.com/files/agrisamoz/home/page.pdf> Date of access: 27 February 2013.
- Anon. 2013a. Farm workers lose jobs after wage hike.
<http://www.bizcommunity.com/Article/196/475/88918.html> Date of access: 5 February 2013.
- Anon. 2013b. AgriSA states position on minimum wage.
<http://www.bizcommunity.com/Article/196/358/88738.html> Date of access: 5 February 2013.
- Anon. 2013c. Minimum wage: All implications not taken into account. *Agri Arbeid/Labour*. 13 Feb/March. 18 p.

- Anseeuw, W. & Ducastel, A. 2012. New agricultural investment models and agrarian changes in South Africa. Paper presented at the Agricultural Economics Association of South Africa conference in Bloemfontein (1-3 October).
- Ardeni, P.G. 2009. Economic Growth in Mozambique? An Assessment. <http://www.dse.unibo.it/wp/381.pdf> Date of access: 22 May 2013.
- Babbie, E. 2004. The practice of social research. 10th ed. Belmont, California: Wadsworth/Thomson Learning. 493 p.
- Babbie, E. & Mouton, J. 2001. The practice of social research. *South African edition*. Oxford: Oxford University Press . 674 p.
- Basic Conditions of Employment Act see South Africa
- BFAP (Bureau for Food and Agricultural Policy). 2013. BFAP Baseline Agricultural outlook, 2012-2021. http://www.bfap.co.za/documents/baselines/BFAP_Baseline_2012.pdf Date of access: 20 July 2013.
- BFAP (Bureau for Food and Agricultural Policy). 2012. Farm sectoral determinations: An analysis of agricultural wages in South Africa. <http://bfap.co.za/documents/research%20reports/BFAP%20farm%20sector%20determination%20report%20draft%2017%20Dec.PDF> Date of access: 15 April. 2013.
- Biacuana, G. 2009. Agriculture, Future Scenarios for Southern Africa: Food Production in Mozambique and Rising Global Food Prices. *International Institute for Sustainable Development*. http://www.iisd.org/tnk/pdf/ag_scenarios_south_africa_mozambique.pdf Date of access: 31 May 2013.
- Bloomberg. 2013. Currency converter. <http://www.bloomberg.com/markets/currencies/currency-converter/> Date of access: 31 May 2013.

- Botten, N. & Sims, A. 2004. Management Accounting - Business strategy. Oxford: Elsevier. 623 p.
- Brück, T. & Van der Broeck, K. 2006. Growth, Employment and Poverty in Mozambique. Issues in Employment and Poverty, Discussion Paper 21. 75p.
- Business Dictionary. 2013.
<http://www.businessdictionary.com/definition/paradigm.html> Date of access: 7 April 2013.
- CIMA (Chartered Institute of Management Accountants). 2012a. CIMA official study text: Paper E1, Enterprise Operations. Oxford: Elsevier. 484p.
- CIMA (Chartered Institute of Management Accountants). 2012b. CIMA official study text: Paper E3, Enterprise Strategy. BPP Learning Media. 574p.
- Coetsee, J. 2011. Afrika: Dis hoekom. *Landbouweekblad*, 4 March.
- DAFF (Department of Agriculture, Fisheries and Forestry). 2011. Trends in the Agricultural Sector. <http://www.nda.agric.za/docs/statsinfo/Trends2011.pdf> Date of access: 9 April 2013.
- DAFF (Department of Agriculture, Fisheries and Forestry). 2012a. Economic review of the South African Agriculture. <http://www.daff.gov.za/docs/statsinfo/EcoReview2012.pdf> Date of access: 9 April 2013.
- DAFF (Department of Agriculture, Fisheries and Forestry). 2012b. Maize market value chain profile.
<http://www.nda.agric.za/docs/AMCP/MaizeMVCP2011.pdf> Date of access: 22 May 2013.
- DAFF (Department of Agriculture, Fisheries and Forestry). 2012c. Wheat market value chain profile.
<http://www.nda.agric.za/docs/AMCP/WheatMVCP2011.pdf> Date of access: 22 May 2013.

- Deloitte. 2011. Four key success factors to growing Agriculture opportunities in Africa. <http://www.deloitte.com/assets/DcomSouthAfrica/Local%20Assets/Documents/Agribusiness%20-%20Four%20key%20success%20factors.pdf>
Date of access: 5 February 2013.
- Dippenaar, A. 2009. What drives large South African corporations to invest in Sub-Saharan Africa? CEO's perspectives and implications for FDI policies. *Natural Resources Forum*, 33:199-210.
- DPRU (Development Policy Research Unit). 2010. Addressing the Plight of Vulnerable Workers: The Role of Sectoral Determinations. <http://www.labour.gov.za/downloads/documents/useful-documents/basic-conditions-of-employment/The%20role%20of%20Sectoral%20Determinations.pdf> Date of access: 5 Aug 2013.
- DPRU (Development Policy Research Unit). 2008. Minimum wages, Employment and Household poverty: Investigating the impact on sectoral determinations. <https://www.labour.gov.za/downloads/documents/researchdocuments/Sectoral%20determinations%20POLICY%20VERSION%20v4.pdf> Date of access: 12 March 2013.
- Dlamini, T.F.G. 2010. Foreign direct investment in the agriculture sector of South Africa: Do GDP and exports determine locational inflows? *Studies in Economics and Econometrics*, 34(2), 57-66.
- Dunning, J.H. 1988. Eclectic paradigm of international production: a restatement and possible extensions. *Journal of International Business Studies*, 19 (1): 1-31.
- Dunning, J.H. 1995. Reappraising the eclectic paradigm in an age of alliance capitalism. *Journal of International Business Studies*, 26 (3): 461-491.
- Dunning, J.H. 1998. Location and the multinational enterprise: A neglected factor? *Journal of International Business Studies*, 29 (1): 45-66.

- Dunning, J.H. 2000. The eclectic paradigm as an envelope for economic and business theories of MNE activity. *International Business Review*, 9: 163-190.
- Ehlers, M.B. & Lazenby, J.A.A. 2006. Strategic management, Southern African concepts and cases. 5th ed. Pretoria: Van Schaik. 308 p.
- Farmer's Weekly. 2010. SA, Zim not safe for investment.
<http://www.agriworldsa.com/article-archive/economic-environment/sa-zim-not-safe-for-investments> Date of access: 11 December 2012.
- Genis, A. 2010. Nuus: Geleentheid in res van Afrika 'ryp om gepluk te word'. *Landbouweekblad*, 20 Oct.
- Grain SA. (petru@grainsa.co.za) 8 June 2013. "Versoek om inligting",
 lehanrisaayman@gmail.com
- Graziano, A.M. & Raulin, M.L. 2010. Research methods: A process of inquiry. 7th ed. Boston, N.Y.: Pearson International Edition. 2-165 p.
- Greyling, J.C. 2012. The role of the agriculture Sector in the South African Economy. <http://scholar.sun.ac.za> Date of access: 12 Feb. 2013.
- Haggblade, S., Theriault, V., Staatz, J., Dembele, N. & Diallo, B. 2012. A Conceptual framework for promoting inclusive agricultural value chains. Prepared for the International Fund for Agricultural Development (IFAD). Michigan State University. 38p.
- Hall, R. 2011. Land grabbing in Southern Africa: the many faces of the investor rush. *Review of African Political Economy*, 38(128):193-214.
- Hall, R. 2012. The next Great trek? South African commercial producers move north. *Journal of Peasant Studies*, 39(3-4):823-843.
- Hanlon, J. 2012. Minimum wages and exchange rates. *Mozambique News reports and clippings*, 18 May.

<http://www.open.ac.uk/technology/mozambique/sites/www.open.ac.uk.technology.mozambique/files/pics/d135458.pdf> Date of access: 15 Feb 2013.

Jones, S. & Tarp, F. 2012. Jobs and welfare in Mozambique: Country case study for the 2013 World Development Report. *World Institute for Development Economics Research*. United Nations University.

[http://siteresources.worldbank.org/EXTNWDR2013/Resources/8258024-1320950747192/8260293-1320956712276/8261091-](http://siteresources.worldbank.org/EXTNWDR2013/Resources/8258024-1320950747192/8260293-1320956712276/8261091-1348683883703/WDR2013_bp_Jobs_and_Welfare_in_Mozambique.pdf)

[1348683883703/WDR2013_bp_Jobs_and_Welfare_in_Mozambique.pdf](http://siteresources.worldbank.org/EXTNWDR2013/Resources/8258024-1320950747192/8260293-1320956712276/8261091-1348683883703/WDR2013_bp_Jobs_and_Welfare_in_Mozambique.pdf)

Date of access: 22 April 2013.

Kassier, E., Cherry, M., Du Toit, I., Aihoon, K. and Le Clus, K. 2003. Advice and assistance in the process of assessing applications for the ministerial determination to pay prescribed minimum wages in the farm worker sector. *Report of the Department of Labour*. Pretoria.

Kaya, H. & Erden, D. 2008. Firm-specific capabilities and foreign direct investment activities of Turkish manufacturing firms: An empirical study. *Journal of Management development*, 27(7):671-777.

Kirsten, J. 1999. The agricultural input industry and the competitiveness of South African agriculture. *Agrekon*, 38(4):487-512.

Klein, N. 2012. Real Wage, Labour Productivity, and Employment Trends in South Africa: A Closer Look. International Monetary Fund, Working paper 12/92.

Kothari, C.R. 2009. *Research Methodology: Methods and Techniques*. 2nd ed. India, New Delhi: New Age International Publishers. 1-8 p.

KPMG. 2009. The challenges of investing in the agriculture sector in Mozambique. <http://www.mcli.co.za/mcli-web/events/2009/30sep09/KPMG.pdf> Date of access: 10 Feb. 2013.

Kriel, G. 2012. Afrika bied al meer geldmaakkanse. *Landbouweekblad*, 10 February, p 22.

- Leedy, P.D. & Ormrod, J.E. 2005. Practical research: planning and design. 8th ed. Upper Saddle River, N.J.: Prentice Hall. 319 p.
- Lestrada-Jefferis, J. 2000. Employment trends in Agriculture in South Africa StatsSA and National Department of Agriculture.
<https://www.statssa.gov.za/Publications/EmployTrendsAgri/EmployTrendsAgri.pdf> Date of access: 12 Feb. 2013.
- Liebenberg, F., & Pardey, P. G. 2010. South African agricultural production and productivity patterns. *The Shifting Patterns of Agricultural Production and Productivity Worldwide*. The Midwest Agribusiness Trade Research and Information Center, Iowa State University, Ames, Iowa.
- Liljeblom, E. & Löflund, A. 2005. Determinants of international portfolio investment flows to a small market: Empirical evidence. *Journal of Multinational Financial Management*, 15 (3): 211-233.
- Macauhub. 2012. Mozambican government needs funding to re-launch wheat production. Newsgroup:
<http://www.mcauhub.com.mo/en/2012/09/20/mozambican-government-needs-funding-to-re-launch-wheat-production/> Date of access: 1 June 2013.
- Macauhub. 17 April 2013. Mozambican Government approves new minimum wage. Newsgroup:
<http://www.mcauhub.com.mo/en/2013/04/17/mozambican-government-approves-new-minimum-wages/> Date of access: 22 April 2013.
- Machika, C. 2013. Questionnaire layout and design. StatsSA.
http://www.statssa.gov.za/y/cs/SpeakerPresentations/Acropolis4/Day2/SessionVC/Session%20VC_Mr.%20Maphion%20Jambwa_Acrop%204/Clementine%20Machika.pdf Date of accessed: 28 April 2013 (PowerPoint presentation).
- Mavie, A. 2012. Agricultural Investment Opportunities in Mozambique. Presentation, June, Maputo, Mozambique.

- Mazvimavi, K., Minde, I., Manussa, S., Tshuma, P. & Murendo, C. 2011. A review of the Agricultural input and output markets development in Mozambique. Paper presented at “Dialogue on Promoting Agricultural Growth in Mozambique”, 21 July 2011, Hotel VIP, Maputo, Mozambique.
- Mearns, K.F. 2011. Ekaluka Farmers’ Association and the Land Reform Programme: Expectations and Success Factors. *Development Southern Africa*, 28(2):241-254.
- Meyer, F. 2012. The Role of the National Development Plan – Vision 2030 in Shaping SA Agriculture and Agribusiness. Presentation at Agricultural Business Chamber congress, 5-6 June, Drakensberg, South Africa.
- Meyer, F. 2013. Grain producers’ labour cost in South Africa [Telephonic interview]. 6 June, Potchefstroom. (Digital recording).
- Meyer, N.G., Breitenbach, M.C., TI Fényes, T.I. & Jooste, A. 2009. The Economic Rationale for Agricultural Regeneration and Rural Infrastructure Investment in South Africa. No. 200910. University of Pretoria, Department of Economics.
- Moore, N. 1983. How to do research. 1st ed. London: Library association. 15-31 p.
- Mouton, J. 2009. How to succeed in your Master’s & Doctoral Studies: A South African guide and resource book. 13th ed. Pretoria: Van Schaik Publishers. 137-142 p.
- Newman, R.A., Ortmann, G.F. & Lyne, M.C. 1997. Farm labour remuneration, labour legislation and commercial farmers’ perceptions in KwaZulu-Natal. *Agrekon*, 36(1):73-84.
- Nicet-Chenaf, D. & Rougier, E. 2011. New exports matter: Discoveries, foreign direct investment and growth, an empirical assessment for Middle East and North African countries. *The Journal of International Trade & Economic Development*, 20(4), 507-533.

- Nucifora, A. M., & da Silva, L. A. P. 2011. Rapid Growth and Economic Transformation in Mozambique. *Yes, Africa Can: Success Stories from a Dynamic Continent*, 65.
- Pauw, K., Thurlow, J., Uaiene, R. & Mazunda, J. 2012. Agricultural Growth and Poverty in Mozambique: Technical Analysis in Support of the Comprehensive Africa Agriculture Development Program (CAADP). *International Food Policy Research Institute, Nov. 2012. Working paper 2.*
- Pienaar, J. 2013. AgriSAMOZ [Personal interview]. 28 June, Pretoria. (Digital recording).
- Rajendra Kumar, C. 2008. Research methodology. 1st ed. India, New Delhi: APH Publishing CO. 1-12 p.
- Ramaila, M., Mahlangu, S. & du Toit, D. 2011. Agricultural productivity in South Africa: Literature review. *Directorate: Economic Services Production Economics Unit.*
<http://www.nda.agric.za/docs/GenReports/AgriProductivity.pdf> Date of access: 3 May 2013.
- Reuters. 2010a. Africa firms launch \$408 mln farmland fund.
<http://www.iol.co.za/business/international/sa-farmers-eye-mozambique-1.876615> Date of access: 6 February 2013.
- Reuters. 2010b. SA producers eye Mozambique.
<http://www.iol.co.za/business/international/sa-producers-eye-mozambique-10876615> Date of access: 28 February 2013.
- Roberts, T. & Antrobus, G.G. 2013. Farmers' perceptions of the impact of legislation on farm workers' wages and working conditions: an Eastern Cape case study. *Agrekon: Agricultural Economics Research, Policy and Practice in Southern Africa*, 52(1): 40-67.
- Rubin, H.J. & Rubin, I.S. 2005. Qualitative interviewing: The art of hearing data. 2nd ed. California, Thousand Oaks: Sage publications. 30-134 p.

- Sarkar, S. 2004. Mozambique: Creating a Productive Wheel in a Competitive Cart. Nathan Associates.
http://www.tipmoz.com/library/resources/tipmoz_media/cat3_link_1115651308.pdf Date of access: 22 May 2013.
- Sharp, L. 2011. SA's labour productivity at 40-year low. Fin24, 10 Nov.
<http://www.fin24.com/Economy/SAs-labour-productivity-at-40-year-low-20111110> Date of access: 21 Feb. 2013.
- Sherry, S. 2013. Farming Mechanisation: Not an easy switch. *Financial Mail*: 50, 28 June – 3 July.
- Simbi, T. & Aliber, M. 2000. Agricultural employment crisis in South Africa. *Trade and Industry Policy Strategies (TIPS) Working Paper 13*. Pretoria: Trade and Industry Policy Strategies.
- Smith, M. 2011. Research methods in accounting. 2nd ed. California, Thousand Oaks: Sage publications. 59 p.
- South Africa. 2013. Basic conditions of employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa. *Government Gazette*, 36115, 5 Feb.
- South Africa. 2012. Basic conditions of employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa. *Government Gazette*, 35067, 24 Feb.
- South Africa. 1997. Basic conditions of employment act no. 75 of 1997. *Sectoral determination 13: Farm worker sector, South Africa*.
- StatsSA (Statistics South Africa). 2011. Agricultural survey 2011 (Preliminary).
http://harvestchoice.org/sites/default/files/downloads/publications/RSA_2011_Survey.pdf Date of access: 15 May 2013.
- StatsSA (Statistics South Africa). 2013. Quarterly labour force survey: quarter 1, 2013.

<http://www.statssa.gov.za/publications/P0211/P02114thQuarter2012.pdf>

Date of access: 12 May 2013.

Trading Economics. 2013. South Africa unemployment rate.

<http://www.tradingeconomics.com/south-africa/unemployment-rate> Date of access: 9 April 2013.

Turner, D.W., III. 2010. Qualitative interview design: A practical guide for novice investigators. *The Qualitative Report*, 15(3), 754-760.

Van der Westhuizen, E. 2013a. Farm worker strike in the Western Cape. *Agri Arbeid/Labour*. 13 Feb/March. 19 p.

Van der Westhuizen, E. 2013b. Labour cost and considerations in South Africa [Personal interview]. 28 June, Pretoria. (Digital recording).

Vink, N. 2001. Livelihoods of farm workers in South African agriculture. Unpublished research report. Stellenbosch: Department of Agricultural Economics, University of Stellenbosch.

Vink, N. & Hall, R. 2010. Agriculture and land reform in South Africa's first decade of democracy. In: S. Jones & R. Vivian, eds. *South Africa: Economy and Policy 1990-2000*. Manchester: Manchester University Press, p 644-670.

Webber, M. & Austin, J.E. 2013. A methodological guide: Tools that make value chains work: Discussion and Cases. Prepared for the World Bank. J.E. Austin Associates, Inc. 216p.

World Bank. 2004. World Development Indicators. *World Development Indicators 2005 (CD-ROM)*. Washington D.C.

World Bank. 2013a. Employment in agriculture (% of total employment). <http://data.worldbank.org/indicator/SL.AGR.EMPL.ZS/countries/ZA?display=graph> Date of access: 28 May 2013.

World Bank. 2013b. Agriculture, value added (% of GDP).

<http://data.worldbank.org/indicator/NV.AGR.TOTL.ZS/countries/MZ-ZA?display=graph> Date of access: 28 May 2013.

World Bank. 2013c. Agriculture value added per worker (constant of 2000 US\$).

<http://data.worldbank.org/indicator/EA.PRD.AGRI.KD/countries/MZ-ZA?display=graph> Date of access: 29 May 2013.

Yin, R.K. 2003. Case study research: design and methods. 3rd ed. California: Sage Publications. 181 p.

APPENDIX 1

THE EFFECT OF HIGHER WAGES ON PRODUCTION COST AND MECHANIZATION: A SOUTH AFRICAN MAIZE SECTOR STUDY

ABSTRACT

The South African labor market was recently characterized by violent and hostile labor strikes by workers demanding exorbitant wage increases. These demands and violent protests overflowed to the agricultural sector, followed by an announcement of a 51% increase in the agricultural minimum wage. Labor costs form an integral part of a producer's production costs and labor increases will therefore directly affect the profitability of producers. The purpose of this study is to investigate the effect that higher wages have on the South African maize sector. Furthermore, to determine whether there is a relationship between higher labor cost and increased mechanization in the maize sector. Quantitative and qualitative research techniques were utilized to address the research problem. The findings of the study include that the higher wages do not have a significant effect on the maize sector, as it is less dependent on manual labor and therefore more tolerant to wage increases. Furthermore, it was determined that there is a relationship between the maize sector's level of mechanization and the impact of higher wages. It was found that the maize sector is more developed and mechanized than other agricultural sectors. Notwithstanding, it is recommended that the sector should maintain the investment in mechanization to increase global competitiveness.

Keywords: Minimum wages, Labor cost, Mechanization, Production cost, Agriculture

INTRODUCTION

Minimum wages in South Africa were first implemented in 2002 (Roberts & Antrobus, 2013). However, on 5 February 2013, the minimum wage for farm workers was increased with a staggering 51%, effective from 1 March 2013 (Anon, 2013a). This latest increase in South African agricultural minimum wages is a prominent topic of discussion. A number of questions have been raised about the effect that this increase will have not only on the economy and unemployment, but also the impact thereof on South African producers. Maize producers specifically play a vital role in ensuring food security in South Africa, provided that they can produce profitably over the long term. The intention of this study is to provide information to South African producers and policy-makers by empirically determining whether, based on the cost of labor, it is still financially viable to continue maize production in South Africa. Therefore, this paper will furthermore investigate the trend of increased agricultural mechanization as a result of significant increases in agricultural wages.

Increased labor cost is not the only type of production cost putting pressure on producers and forcing them to consider alternatives. Instead, it can be viewed as a mixture of total increases in various input costs, such as i) labor, ii) fertilizer, iii) fuel, iv) electricity, and v) seed (Vink & Hall, 2010). Kirsten (1999) concluded that it is essential to evaluate not only production output, but also production input, for both contribute to a producer's competitiveness and add value during the value chain cycle. As a result of significant increases in total production input cost, producers must make structural changes to remain profitable. If, for some reason, structural changes cannot be implemented, consideration must be given to other production practices, such as: i) diversifying into other agricultural markets, ii) exiting farming and seeking other employment, or iii) diversifying or relocating to other countries (Sherry, 2013; Hall, 2012).

In order to define the research objectives, this paper will use production cost data gathered from Grain South Africa (Grain SA, 2013). This data will be used to analyze and interpret trends in the various elements of maize's production cost. This will enable the researcher to determine whether increases in labor cost do indeed impact maize producers' production decisions and therefore the profitability of the South African maize sector as a whole. It should be noted that different markets in the agricultural sector will react differently to increases in labor cost, depending on the specific market's labor intensity (Meyer, 2013). For purposes of this study, the focus will be on the maize market and the effect of higher labor cost thereon.

This research paper will be structured as follows: the first section will present the literature review and research gap, the theoretical framework and the research problem and research objectives. The second section will discuss the relevant research methodology followed in order to empirically determine the set of research objectives. Section 3 will focus on the agricultural sector in South Africa, paying special attention to the grain market in South Africa and, furthermore, it will focus on increased mechanization in the South African agricultural sector. Section 4 will empirically investigate labor cost as an element of total production cost. The paper will conclude with findings and final conclusions about the effect of increased labor cost on the South African maize market.

1.1 Literature review and research gap

A thorough review of the relevant literature was performed to identify the knowledge gap and to establish the appropriate research method to follow to fill this gap. Statistics South Africa (Stats SA) (2011) annually releases an agricultural survey focusing on expenditure, Gross Domestic Product (GDP) contribution, production levels and agricultural employment. Research conducted by Simbi and Aliber (2000) focused on labor trends in the South African agricultural sector. The main findings of the report include that employment in the commercial farming sector is declining as producers have chosen to shed permanent workers. Kirsten (1999) was concerned about the input industry of South African agriculture and the effect thereof on competitiveness. The research recommended that the agricultural industry should be well integrated to ensure competitiveness in the overall agricultural value chain. A comprehensive report released by the Bureau of Food and Agricultural Policy (BFAP) (2012) focused on the effect of labor increases and the result thereof on four agricultural sectors in the Western Cape area in South Africa. This report forecasted the different net farming income according to different levels of minimum wages using a model developed by BFAP called the FinSim Model.

Based on the afore-mentioned, it is clear that a knowledge gap of research investigating the effect of higher labor cost focusing on maize producers exists. This topic is, however, relevant especially in light of the

significant increase in the latest announced minimum wage for the period 2013 to 2014 and the important role maize production plays in providing food security.

1.2 Theoretical framework

This exploratory study will be based on the theoretical concept of value chain analysis developed by Michael Porter. This theory states that activities in the production process add value to the final product for the end user, and that non-value-adding activities should be eliminated (CIMA, 2012a; CIMA, 2012b). For example, research conducted by Ramaila *et al.* (2011) was based on this theoretical concept and found that technology and increased mechanization can help increase competitiveness and add value.

1.3 Problem statement and research objectives

The agricultural sector of South Africa is of great importance; not only can it be viewed as the primary sector responsible for securing food production, it is also an earner of foreign exchange, and a significant provider of employment (Roberts & Antrobus, 2013; Greyling, 2012; Lestrada-Jefferis, 2000). Its importance is further highlighted by the sector's inclusion in the South African Government's Plan, Vision 2030, with the aim of creating employment and alleviating poverty by 2030. This government plan aims to create 1 million jobs in the agricultural sector alone (Anon, 2013b; Meyer, 2012). This goal may be difficult to reach considering factors such as government policies, legislation, and intervention (Vink & Hall, 2010), which will be elaborated upon later on in the study. However, to ensure this goal of creating employment is met, and for food security to be achieved, a maize producer should operate profitably. The following research questions can therefore be asked: Is it still financially viable for maize producers to produce in South Africa based solely on labor considerations? Furthermore, what effect does the increase in labor cost have on the maize producers' total production cost? Does the increased labor cost lead to increased mechanization?

In order to successfully answer the before-mentioned research problems, the following objectives were set: i) to determine the financial effect of increased labor cost on maize producers' production cost, in relation to increases in other input cost, and ii) to determine the possible link between higher labor cost and increased mechanization.

RESEARCH DESIGN

A mixed method approach was followed to address the research problem, combining quantitative and qualitative research techniques. Data was gathered from Grain SA (2013), a voluntary non-profit organization of South African grain producers established to represent the interest of its members. The data regarding total production cost of maize producers in different regions in South Africa was analyzed and interpreted. A weighted average production cost for different regions was calculated, with the regions including: i) the North West Province, ii) The eastern Free State, iii) Mpumalanga, and iv) KwaZulu-Natal (Grain SA, 2013). These regions are considered the key maize-producing areas in South Africa (BFAP, 2013).

Furthermore, data on mechanization in the agricultural sector was gathered by means of a two-fold process using qualitative techniques. Firstly, a critical review of relevant research published was performed, and secondly, an interview was conducted with Dr Ferdi Meyer, head of the Bureau for Food and Agricultural Policy (BFAP). BFAP performs agricultural research for interested parties, including government and producers, in order to improve decision-making. Meyer is also a grain producer, and is heavily involved in developing government plans for agriculture. He can therefore be regarded as an expert in the field of agriculture. Making use of this relatively small number of participants was a conscious choice of trade-off between quality and quantity of data by the researcher. The basis for this decision is that more reliable data was obtained by interviewing a small number of experts in this field of research than interviewing a large number of inadequate informed producers.

BACKGROUND

3.1 Agricultural minimum wages and the economic effect

As mentioned previously, minimum wages were first implemented in South Africa in 2002 with an effective date of 1 March 2003 (Roberts & Antrobus, 2013). Some of the main reasons for this implementation were to protect farm workers and reduce poverty (Kassier *et al.*, 2003:7). Vink (2001:60) found that most farm workers were living in absolute poverty and therefore government intervention was needed to regulate the living and working conditions of farm workers (Kassier *et al.*, 2003:7). Agriculture, however, is still the lowest paid sector in South Africa. Implementing higher wages in order to uplift poverty, especially in rural areas, is a normal transformation for a developing country, and from a social prospective it can be viewed as a step in the right direction; especially since the government's main aim is to protect workers and uplift their poverty (Meyer, 2013). Higher wages for all may have a positive effect, indirectly contributing to lower crime rates. This theory can only be true if no social problems exist in a country. The reality is that South Africa is a country with a number of social issues that need to be addressed, before significant increases in minimum wages, for mostly unskilled workers, will bring about the possible positive effects. In South Africa, significant increases in the agricultural minimum wage, such as the 51% increase announced by the Minister of Labour, Ms Mildred Oliphant, on 5 February 2013, brought about nearly 2 000 retrenchments (Anon, 2013a). Simulations and calculations performed by BFAP suggest that a further 120 000 jobs are expected to be lost in the agricultural sector of South Africa (Meyer, 2013). Therefore, in effect, more people are now unemployed with no income, creating even more social problems and working against the government's plan, Vision 2030, which aims to reduce poverty and create employment in the agricultural sector of South Africa (Meyer, 2013; Van der Westhuizen, 2013).

3.2 South African grain sector

The South African grain sector utilizes 4.3 million hectares of available land in South Africa. Based on the size of the grain sector, it remains a significant provider of employment in South Africa (BFAP, 2012). Grain is classified as being a field crop. The grain-producing sector of South Africa is divided into different types of grain, with maize, and wheat being the two largest contributors. In 2011, maize contributed 47.2% (R15 086 million) of total field crop production in South Africa (DAFF, 2011). There are approximately 9 000 commercial maize producers in South Africa and the maize market provides employment to 150 000 workers (DAFF, 2012a). Wheat, on the other hand, is the second largest contributor to total field crop production in South Africa with a contribution of 9% (R3 850 million) of the total value (DAFF, 2011). In terms of global wheat production, South Africa is ranked 37th. It is estimated that there are approximately 3 800 to 4 000 wheat producers in South Africa. The wheat market provides employment to approximately 28 000 people in South Africa (DAFF, 2012b). With global technology changing constantly, the maize market has already undergone significant changes in their production process with the implementation of, for example, technologically-advanced tractors replacing manual laborers. The maize sector in South Africa has therefore already started to implement structural changes, becoming less dependent on manual laborers (Meyer, 2013; BFAP, 2012). Furthermore, a sector's labor intensity determines its exposure to volatility when wages are changed.

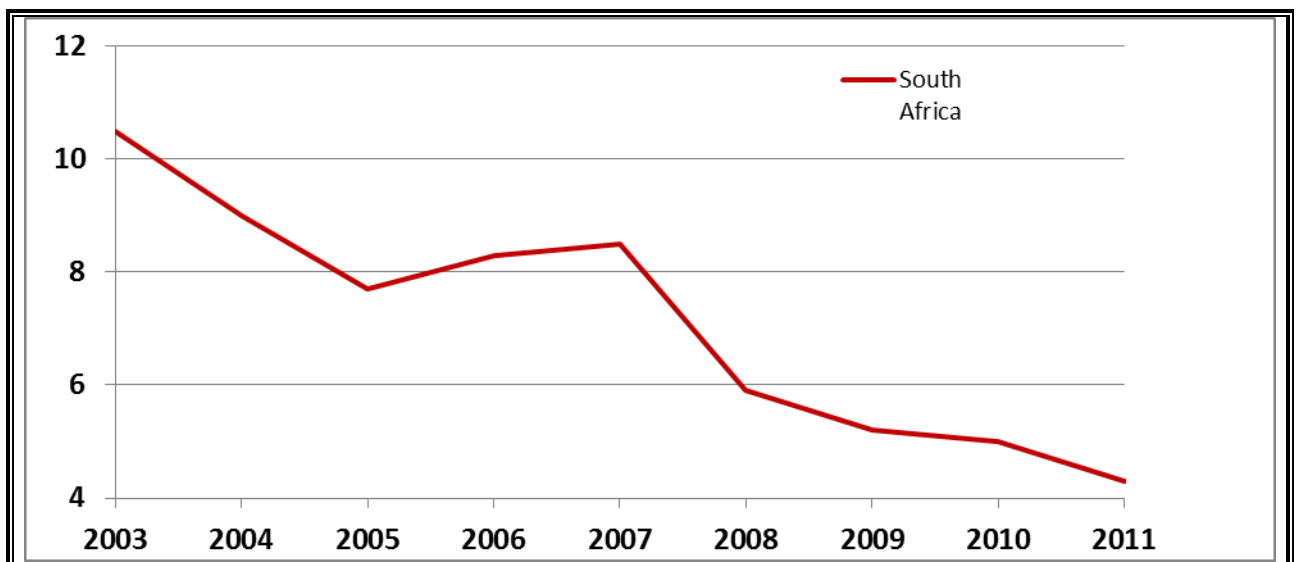
MECHANIZATION VERSUS HIGHER WAGES WITH SPECIAL REFERENCE TO THE MAIZE SECTOR

For the South African agricultural sector to remain competitive and compete against subsidized producers globally, mechanization is a necessity. Producers should consider moving away from labor-intensive farming by implementing structural changes (Sherry, 2013). Recent research conducted by Ramaila *et al.* (2011) indicated that technological improvement can lead to increased agricultural productivity. Furthermore, mechanization, such as technologically-advanced tractors, can substitute manual laborers needed, reduce harvesting time and cut production cost (BFAP, 2012). However, not all sectors are able to implement structural changes to the same extent and mechanization can be a costly process; however, the value that can be added to the value chain is endless. A producer has to evaluate the increase in production cost as result of increased minimum wages against the capital outlay and costs of restructuring business processes.

Since drastic increases in labor costs are resulting in producers not being able to cover operating expenses, producers are considering alternatives, including: i) diversifying operations in order to spread risk, ii) diversifying through producing alternate agricultural products less labor intensive, iii) substituting numerous

unskilled workers with more, skilled workers, and iv) mechanization (BFAP, 2012; Hall, 2012). BFAP (2012) stated that mechanization should not be seen as a threat to employment, but rather as an opportunity to increase the value added per farm worker. The South African agricultural sector is still relatively labor intensive, with dependency on manual laborers varying according to different sub-sectors. An increase in mechanization in South Africa is, however, evident with sales figures of mechanical implements from 2003 to 2012 increasing from 3 200 to 7 800 units sold per annum (Sherry, 2013; Anon, 2013a). Part of this increase in sales can be directly contributed to significant increases in labor cost (Meyer, 2013; Sherry, 2013; Anon, 2013a; BFAP, 2012). However, increased wages are not the only reason for this increase in sales; another contributor is the agricultural commodity price boom from 2007 to 2012. Agricultural commodity prices nearly doubled during this period, resulting in the net farming income of producers increasing significantly. With the available surplus funds, producers increased investments into capital equipment (Meyer, 2013). Larger farms that invested in technology leading to increased mechanization and economies of scale, are currently able to produce at lower production costs. Graph 1 illustrates the declining rate of employment by the agricultural sector in South Africa over the period 2003 to 2012. This trend can also be an indication of the South African agricultural sector becoming more mechanized by substituting manual laborers with increased mechanization.

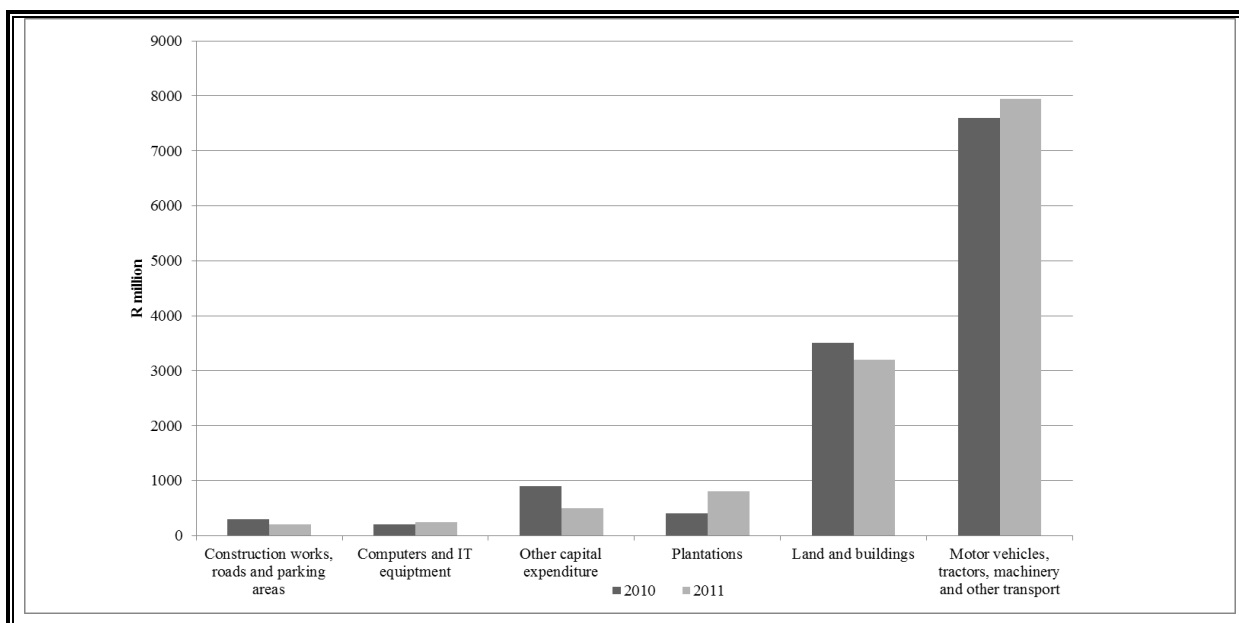
Graph 1: Employment in the agricultural sector of South Africa: 2003 to 2012



Source: World Bank (2013)

Graph 2 illustrates the capital expenditure of commercial producers for the period 2010 to 2011. Although two years' data is not sufficient to determine a trend, it is evident that expenditure on motor vehicles, tractors, machinery and other transport represented the biggest portion.

Graph 2: Capital expenditure by commercial farming sector: 2010 to 2011



Source: Stats SA (2011) adapted

The extent of the effect of higher labor cost on production cost will depend largely on the percentage that labor represents of total production cost. However, sectors that have already undergone structural changes and therefore are less dependent on manual laborers will be more tolerant to increases in the labor cost.

Mechanization was first introduced in the maize production process, while the harvest process was more reliant on manual laboring. However, with technological developments over the last number of years, the harvesting process is also now moving towards increased mechanization (BFAP, 2012). Furthermore, when compared to other sectors, the maize sector is more mechanized and able to implement structural changes than other sectors such as the vegetable and fruit sectors (Meyer, 2013). Currently, labor represents approximately 7.65% of total production cost on an average grain-producing farm, compared to a 34% average on an apple and pear farm (Meyer, 2013; BFAP, 2012). Mechanized production methods are able to add more value to the value chain and can in effect eliminate cost disadvantages created through increased labor cost (Ramaila *et al.*, 2011). This is in contrast to labor-intensive sectors that are more negatively influenced by higher wages and therefore prone to retrench workers (BFAP, 2012).

ANALYSIS OF LABOR COST AS PART OF PRODUCTION COST

Labor is only one element of a number of production cost items and, in South Africa, this labor cost is heavily influenced by the agricultural minimum wage. However, an increase in statutory labor or minimum wage rates is not directly correlated with the percentage increase of labor's portion of total production cost. For example, a 10% increase in the agricultural minimum wage rate may only lead to a 4% increase in labor cost as a percentage of total production cost (Meyer, 2013). This imperfect relationship may be attributed to: i) producers saving costs by reducing their workforce through retrenchments resulting in labor representing a smaller percentage of total production cost, and ii) a sector's level of dependence on manual labor, as a highly dependent sector, will be more influenced by higher wages (Meyer, 2013; BFAP, 2012).

The open question of this study for the core audience of South African producers and policy-makers is to determine whether the effect of higher wages negatively influenced the financial viability of the maize sector of South Africa, focusing specifically on the production data of maize in the key producing areas. As total production cost has increased due to increases in the various production cost items, one can ask: "What percentage of the total increase in production cost can be directly attributed to higher wages?" This question

will be addressed by analyzing the different factors that led to higher production cost for South African maize producers. However, the literature indicates that significant increases in labor are not the only element contributing to higher production cost, which, in turn, negatively affects the profitability of producers. It should also be noted that some variables influencing a producer's profitability cannot be controlled, including: i) weather conditions, and ii) commodity prices.

Variable maize production cost (excluding fixed production cost) consists of the following items: i) seed, ii) fertilizer, iii) weed control cost, iv) pest control cost, v) fuel, vi) seasonal workers, vii) permanent workers, and viii) a combination of smaller items (Grain SA, 2013; DAFF, 2012c). These main production cost elements will be used to conduct the analysis.

Certain seasons in the maize production process require increased labor, which is when seasonal workers are utilized. These seasonal workers are paid the same rate as permanent workers, which is regarded as a criticism against a fixed minimum wage rate for all farm workers (Meyer, 2013).

The data obtained from Grain SA (2013) was in the form of total maize production cost per hectare. The total increase in production cost per hectare from year to year was analyzed and interpreted based on the various increases in the above-mentioned main production cost elements per hectare. Table 1 presents the various variable production cost and contribution per hectare for maize from 2002 to 2013, for the key producing areas in South Africa (North West Province, eastern Free State, Mpumalanga, and KwaZulu-Natal). The 2013 data are projections as provided by Grain SA (2013). Minimum wages were first implemented in South Africa in 2002 (Roberts & Antrobus, 2013).

Table 1: Variable production cost of maize per hectare: 2002 to 2013

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Income/ha	5376.8	3890.5	4347.9	3105.2	5400.7	8926.9	8926.9	8027.4	5062.8	7837.8	8599.2	12437.4
	8	8	0	7	2	5	5	0	9	8	3	6
Production cost: Rand	2572.5	2812.4	2925.4	2951.3	3251.5	3890.0	4419.1	5702.4	4278.7	4604.3	6576.6	9027.40
	9	8	2	5	8	2	1	5	8	4	7	
Seed	209.21	217.38	294.36	332.57	341.17	456.63	431.96	599.63	572.67	726.65	1268.0	1170.54
											0	
Fertilizer	548.06	765.81	730.41	753.95	788.98	1020.1	1342.8	1903.2	1586.2	1754.7	2705.0	3098.83
						7	7	1	2	2	0	
Weed control	132.02	165.64	162.79	155.18	184.48	259.38	236.41	485.79	371.50	415.30	582.00	634.31
Pest control	60.76	96.57	86.71	95.13	64.98	45.00	64.40	0.00	115.00	111.75	335.00	297.81
Fuel	365.39	322.64	334.42	384.58	477.38	505.21	652.09	627.29	572.54	642.48	727.00	909.47
Permanent workers	207.48	210.03	236.36	240.74	287.99	277.11	296.08	320.00	334.46	332.81	398.58	577.83
Seasonal workers	27.87	29.50	17.03	23.41	30.05	35.47	35.47	45.50	51.31	57.25	70.00	-
Other combined	1021.8	1004.9	1063.3	965.79	1076.5	1291.0	1359.8	1720.7	674.85	563.14	491.09	2338.61
	0	1	4		4	4	3	5				
Contribution / ha	2804.3	1078.1	1422.4	153.92	2149.1	5036.9	4507.8	2324.9	784.11	3233.5	2022.5	3410.06
	0	0	9		4	4	4	5		3	6	

Source: Grain SA, 2013

Table 2 indicates the overall real growth from 2002 to 2013 in the income, production cost elements and contribution per hectare.

Table 2: Annual average growth rate in variable maize production cost elements from 2002 to 2013

	Growth rate
Income/ha	7.92%
Production cost / variable cost:	12.09%
Seed	16.95%
Fertilizer	17.06%
Weed control	15.34%
Pest control	15.55%
Fuel	8.64%
Permanent workers	9.76%
Seasonal workers (2003 to 2012)	9.65%
Other combined	7.82%
Contribution/ha	7.82%

Source: Own calculations based on data obtained from Grain SA (2013)

Table 3 illustrates the annual percentage change for the income, production cost elements and contribution per hectare. There has been a 19.76% and 22.27% increase from 2011 to 2012 in the cost of permanent and seasonal workers, respectively. The 2013 projection data anticipates a 44.97% increase in the labor cost of permanent workers; this is due to the 51% increase in agricultural minimum wages for the period 2013 to 2014. This increase of 44.97% is therefore slightly lower than the percentage increase in the fixed minimum wage rate for the corresponding period. However, significant increases in other production cost elements are also evident from 2003 to 2013, with pest control, seed and fertilizer all showing increases in excess of 50%.

Table 3: Annual percentage (%) change in variable maize production cost: 2002 to 2013

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Income/ha	-27.64	11.75	-28.58	73.92	65.29	51.66	-10.08	-36.93	54.81	9.71	44.63
Production cost	9.33	4.02	0.89	10.17	19.63	13.60	29.04	-24.97	7.61	42.84	37.26
Seed	3.91	35.41	12.98	2.59	33.84	-5.40	38.82	-4.50	26.89	74.50	-7.69
Fertilizer	39.73	-4.62	3.22	4.65	29.30	31.63	41.73	-16.66	10.62	54.16	14.53
Weed control	25.47	-1.72	-4.68	18.88	40.60	-8.86	105.49	-23.53	11.79	40.14	8.99
Pest control	58.92	-10.20	9.70	-31.69	-30.75	43.11	-100.00	0.00	-2.83	199.78	-11.10
Fuel	-11.70	3.65	15.00	24.13	5.83	29.07	-3.80	-8.73	12.22	13.16	25.10
Permanent workers	1.23	12.53	1.86	19.62	-3.78	6.85	8.08	4.52	-0.49	19.76	44.97
Seasonal workers	5.86	-42.29	37.52	28.34	18.04	-0.01	28.29	12.77	11.58	22.27	-
Other combined	-1.65	5.81	-9.17	11.47	19.92	5.33	26.54	-60.78	-16.55	-12.79	376.21
Contribution/ha	-61.56	31.94	-89.18	1296.29	134.37	125.82	-39.12	-11.96	47.20	-33.12	68.60

Source: Own calculations based on data obtained from Grain SA (2013)

This data was further analyzed with Table 4 presenting the results of the weights the various increases in production cost represented of the total increase in production cost. For example, the increase of 37.26% in 2013 was further analyzed to determine the percentage each production cost element contributed (as a % of 100%) to the total increase in production cost per hectare. This was done to determine what portion of the total increase in production cost was represented by labor cost.

Table 4: Percentage contribution per production cost element: 2002 to 2013

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Production cost	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Seed	8.13	7.73	10.06	10.49	11.74	9.77	10.52	13.38	15.78	19.28	12.97
Fertilizer	21.30	27.23	24.97	24.26	26.23	30.39	33.38	37.07	38.11	41.13	34.33
Weed control	5.13	5.89	5.56	5.67	6.67	5.35	8.52	8.68	9.02	8.85	7.03
Pest control	2.36	3.43	2.96	2.00	1.16	1.46	0.00	2.69	2.43	5.09	3.30
Fuel	14.20	11.47	11.43	14.68	12.99	14.76	11.00	13.38	13.95	11.05	10.07
Permanent workers	8.07	7.47	8.08	8.86	7.12	6.70	5.61	7.82	7.23	6.06	6.40
Seasonal workers	1.08	1.05	0.58	0.92	0.91	0.80	0.80	1.20	1.24	1.06	-
Other combined	39.72	35.73	36.35	33.11	33.19	30.77	30.18	15.77	12.23	7.47	25.91

Source: Own calculations based on data obtained from Grain SA (2013)

As is evident from the data in Table 4, the 42.84% and 37.26% increase in the production cost from 2011 to 2012 and 2012 to 2013 respectively, is mostly due to a 41.13% and 34.33% increase in fertilizer for both 2012 and 2013. Labor cost (permanent workers and seasonal workers) contributed roughly 6% to the total increase. The two elements mostly contributing to the annual production cost increase are the other combined elements and the increase in fertilizer. The increase in labor cost as a percentage of total production cost cannot therefore be regarded as significant. A possible reason may be that the maize sector in South Africa is relatively not heavily reliant on manual labor and therefore the higher minimum wages will not significantly influence the profitability of the sector.

In order to investigate the influence of the minimum wage increases on labor as percentage of maize production cost, a comparison was drawn between the latter and the increase in agricultural minimum wages.

Table 5 indicates the monthly agricultural minimum wage in South Africa from 2003 to 2013 compared to the annual increase or decrease of the cost of permanent and seasonal workers included in the total variable production cost of maize. Furthermore, Table 5 includes the annual average of the South African Producer Price Index (PPI) for commodities in domestic output. The increase/decrease in minimum wage and labor as part of variable production cost is compared to the PPI as it is used as an indicator of inflation or deflation for locally-produced commodities (Stats SA, 2013).

Table 5: Agricultural minimum wage rate compared to % increase in labor as part of variable production cost

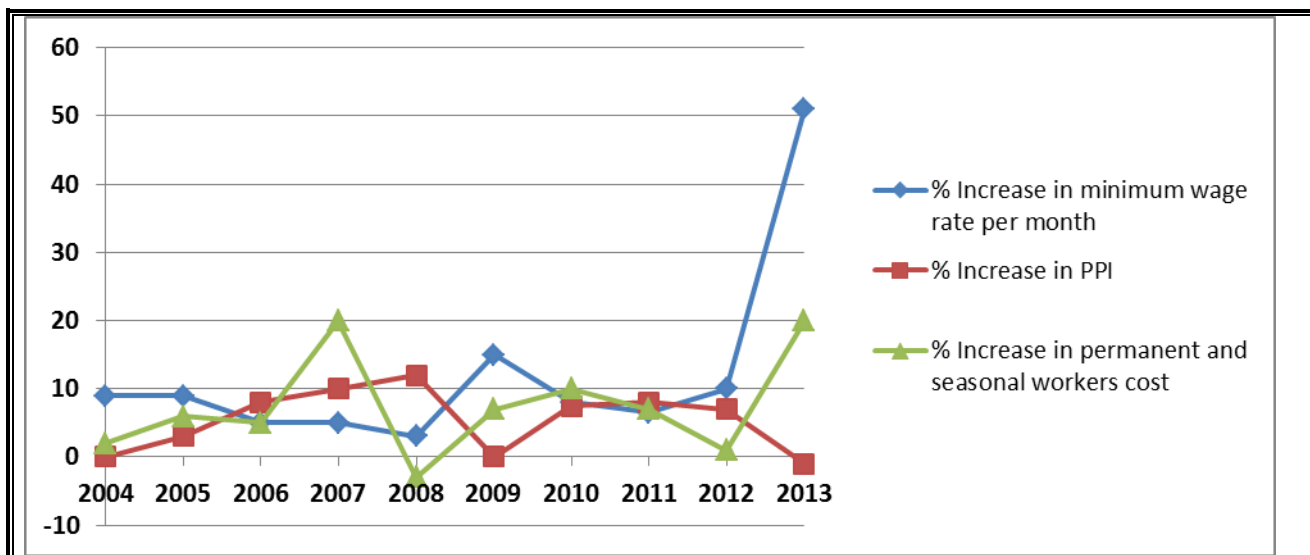
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Minimum wage rate per month	800.00	871.00	949.00	994.00	1041.00	1073.00	1231.00	1316.00	1375.00	1503.00	2274.00
% Increase		8.88%	8.96%	4.74%	4.73%	3.07%	14.73%	6.90%	4.48%	9.31%	51.30%
% Increase in permanent and seasonal workers cost		1.78%	5.78%	4.25%	20.40%	-1.72%	6.07%	10.24%	5.55%	1.11%	20.13%
% Increase in PPI		0.6%	3.1%	7.6%	10.9%	14.2%	-0.1%	6.0%	8.4%	6.2%	6.6% (July)

Source: Own calculations from data obtained from Stats SA (2013); South Africa (2013); South Africa (2012); South Africa (2009); South Africa (2006); South Africa (2002); and DPRU (2010)

From the data analyzed in Table 5, it can be gathered that the agricultural minimum wage rate increased from 2012 to 2013 with 51.30%, while the percentage increase in permanent and seasonal workers' cost, i.e. labor cost, was only 20.13%. These increases are significantly higher than the PPI increase of 6.6% (refer to Graph 3). A possible reason is that the latest increase in minimum wage is only effective from 1 March 2013 and will take time to filter through to a PPI increase. The average annual increase in minimum wages over the past 10 years (as per data in Table 5) was calculated as 11.74%. If such a trend continues, then evidence suggests that the increase in the minimum wage rate is much higher than the resultant increase or decrease

that labor contributed to the increase or decrease in total variable production cost per hectare (refer to Graph 3). Considering labor percentage as part of total production cost, the highest percentage labor formed of total production cost was 9.78%, which is much lower than the astonishing annual average increase of 11.74% (refer to Table 4).

Graph 3: Agricultural minimum wage rate compared to % increase in labor as part of variable maize production cost



Source: Own calculations from data obtained from Stats SA (2013); South Africa (2013); South Africa (2012); South Africa (2009); South Africa (2006); South Africa (2002); and DPRU (2010)

FINDINGS AND CONCLUSIONS

The research objectives of the study was firstly to determine the financial effect of increased labor cost on maize producers' production cost in relation to increases in other input cost, and secondly, to determine the possible link between higher labor cost and increased mechanization. The study started off by analyzing the various variable maize production cost elements per hectare from 2002 to 2013 (refer to Table 1), followed by a calculation of the annual average growth rate of each element (refer to Table 2). The data in Table 2 indicated that the annual average growth rate from 2002 to 2013 was 9.76% and 9.65% for permanent workers and seasonal workers, respectively. Next, the annual percentage change in each cost element was determined in Table 3, followed by a further analysis presenting the results of the weight the various increases in production cost represented of the total increase in production cost. Finally, Table 5 compared the increase in agricultural minimum wages to i) the annual increase or decrease of the cost of permanent and seasonal workers included in the total variable production cost of maize, and ii) the annual average South African PPI increase. It was found that although the annual increase in agricultural minimum wages over the last decade was 11.74%, labor as a percentage of maize production cost did not increase at the same rate. It can therefore be concluded that the increase in minimum wages did not have a significant financial effect on maize producers' production cost. It was furthermore found that the main cause for the increased production cost of South African maize producers relates to increases in other production inputs such as fertilizer and other combined items.

With regard to the second research objective, the findings suggest that there is a definite relationship between a sector's level of mechanization and the impact of higher wages, i.e. a labor intensive sector will be more negatively affected by rising labor costs compared to more mechanized sectors. When considering the South African maize sector, it can be concluded based on calculations performed combined with interviews conducted and literature reviewed that the maize sector of South Africa is more developed and mechanized compared to other agricultural sectors. However, it is recommended that the maize sector of South Africa should maintain the investment in structural changes and move from labor-intensive production towards increased mechanization to increase global competitiveness. This supports the value chain analysis theory that activities in the production process such as mechanization add value to the final product for the end user,

and that non-value-adding activities should be eliminated. Mechanization, however, can be a costly process and the cost thereof will have to be weighed up against the cost of higher labor. Through increased mechanization, the negative effects of increased wages can be countered to a certain degree, but sectors not able to implement structural changes to increase mechanization will be affected the most by drastic increases in the minimum wage rate.

Areas for further research include the expansion of this study by investigating the impact of higher labor cost on other agricultural sectors, such as the wine and certain vegetable sectors.

REFERENCES

- Anon. (2013a). Farm workers lose jobs after wage hike.
<http://www.bizcommunity.com/Article/196/475/88918.html> Date of access: 5 February 2013.
- Anon. (2013b). AgriSA states position on minimum wage.
<http://www.bizcommunity.com/Article/196/358/88738.html> Date of access: 5 February 2013.
- Babbie, E. & Mouton, J. (2001). The practice of social research. *South African edition*. Oxford: Oxford University Press . 674 p.
- BFAP (Bureau for Food and Agricultural Policy). 2013. BFAP Baseline Agricultural outlook, 2012-2021.
http://www.bfap.co.za/documents/baselines/BFAP_Baseline_2012.pdf Date of access: 20 July 2013.
- BFAP (Bureau for Food and Agricultural Policy). (2012). Farm sectoral determinations: An analysis of agricultural wages in South Africa.
<http://bfap.co.za/documents/research%20reports/BFAP%20farm%20sector%20determination%20report%20draft%2017%20Dec.PDF> Date of access: 15 April 2013.
- CIMA (Chartered Institute of Management Accountants). (2012a). CIMA official study text: Paper E1, Enterprise Operations. Oxford: Elsevier. 484p.
- CIMA (Chartered Institute of Management Accountants). (2012b). CIMA official study text: Paper E3, Enterprise Strategy. BPP Learning Media. 574p.
- DAFF (Department of Agriculture, Fisheries and Forestry). (2012a). Maize market value chain profile.
<http://www.nda.agric.za/docs/AMCP/MaizeMVCP2011.pdf> Date of access: 22 May 2013.
- DAFF (Department of Agriculture, Fisheries and Forestry). (2012b). Wheat market value chain profile.
<http://www.nda.agric.za/docs/AMCP/WheatMVCP2011.pdf> Date of access: 22 May 2013.
- DAFF (Department of Agriculture, Forestry and Fisheries). (2012c). Economic review of the South African Agriculture. <http://www.daff.gov.za/docs/statsinfo/EcoReview2012.pdf> Date of access: 9 April 2013.
- DAFF (Department of Agriculture, Fisheries and Forestry). (2011). Trends in the Agricultural Sector.
<http://www.nda.agric.za/docs/statsinfo/Trends2011.pdf> Date of access: 9 April 2013.
- DPRU (Development Policy Research Unit). (2010). Addressing the Plight of Vulnerable Workers: The Role of Sectoral Determinations. <http://www.labor.gov.za/downloads/documents/useful-documents/basic-conditions-of-employment/The%20role%20of%20Sectoral%20Determinations.pdf> Date of access: 5 Aug 2013.
- Grain SA. (petru@grainsa.co.za) 8 June 2013. "Versoek om inligting", lehanrisaayman@gmail.com
- Greyling, J.C. (2012). The role of the agricultural sector in the South African Economy.
<http://scholar.sun.ac.za/handle/10019.1/71713> Date of access: 12 Feb. 2013.
- Hall, R. (2012). The next Great trek? South African commercial producers move north. *Journal of Peasant Studies*, 39(3-4):823-843.
- Kassier, E., Cherry, M., Du Toit, I., Aihoon, K. & Le Clus, K. (2003). Advice and assistance in the process of assessing applications for the ministerial determination to pay prescribed minimum wages in the farm worker sector. Report of the Department of Labor. Pretoria.
- Kirsten, J. (1999). The agricultural input industry and the competitiveness of South African agriculture. *Agrekon*, 38(4):487-512.

- Kothari, C.R. (2009). *Research Methodology: Methods and Techniques*. 2nd ed. India, New Delhi: New Age International Publishers. 1-8 p.
- Lestrada-Jefferis, J. (2000). *Employment trends in Agriculture in South Africa*.
<https://www.statssa.gov.za/Publications/EmployTrendsAgri/EmployTrendsAgri.pdf> Date of access: 12 Feb. 2013.
- Meyer, F. (2012). *The Role of the National Development Plan – Vision 2030 in Shaping SA Agriculture and Agribusiness*. Presentation at Agricultural Business Chamber congress, 5-6 June, Drakensberg, South Africa.
- Meyer, F. (2013). *Grain producers' labor cost in South Africa* [Telephonic interview]. 6 June, Potchefstroom. (Digital recording).
- Ramaila, M., Mahlangu, S. & du Toit, D. (2011). *Agricultural productivity in South Africa: Literature review*. *Directorate: Economic Services Production Economics Unit*.
<http://www.nda.agric.za/docs/GenReports/AgriProductivity.pdf> Date of access: 3 May 2013.
- Roberts, T. & Antrobus, G.G. (2013). *Farmers' perceptions of the impact of legislation on farm workers' wages and working conditions: an Eastern Cape case study*. *Agrekon*, 52:(1): 40-67
- Sherry, S. (2013). *Farming Mechanization: Not an easy switch*. *Financial Mail*: 50, 28 June - 3 July.
- Simbi, T. & Aliber, M. (2000). *Agricultural employment crisis in South Africa*. *Trade and Industry Policy Strategies (TIPS) Working Paper 13*. Pretoria: Trade and Industry Policy Strategies.
- South Africa. (2013). *Basic conditions of Employment Act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa*. *Government Gazette*, 36115, 5 Feb.
- South Africa. (2012). *Basic conditions of employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa*. *Government Gazette*, 35067, 24 Feb.
- South Africa. (2009). *Basic conditions of Employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa*. *Government Gazette*, 31888, 13 Feb.
- South Africa. (2006). *Basic conditions of Employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa*. *Government Gazette*, 28518, 17 Feb.
- South Africa. (2002). *Basic conditions of Employment act 1997 (Act no. 75 of 1997). Sectoral determination 13, farm worker sector, South Africa*. *Government Gazette*, 24114, 2 Dec.
- StatsSA (Statistics South Africa). (2011). *Agricultural survey 2011 (Preliminary)*.
http://harvestchoice.org/sites/default/files/downloads/publications/RSA_2011_Survey.pdf Date of access: 15 May 2013.
- StatsSA (Statistics South Africa). (2013). *Producer Price Index (PPI)*.
<http://www.statssa.gov.za/publications/statsdownload.asp?PPN=P0142.1&SCH=4316> Date of access: 20 Sept 2013.
- Van der Westhuizen, E. (2013). *Labor cost and considerations in South Africa* [Personal interview]. 28 June, Pretoria. (Digital recording).
- Vink, N. (2001). *Livelihoods of farm workers in South African agriculture*. Unpublished research report. Stellenbosch: Department of Agricultural Economics, University of Stellenbosch.

Vink, N. & Hall, R. (2010). Agriculture and land reform in South Africa's first decade of democracy. In: S. Jones & R. Vivian, eds. South Africa: Economy and Policy 1990-2000. Manchester: Manchester University Press, p 644-670.

World Bank. (2013). Employment in agriculture (% of total employment).
<http://data.worldbank.org/indicator/SL.AGR.EMPL.ZS/countries/ZA?display=graph> Date of access: 28 May 2013.

APPENDIX 2

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References (American Psychological Association style)
Appendices (if applicable)

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The title should be concise, descriptive, and contain the keywords or key phrases. Search engines assume that the title contains all of the important words that describe the topic of the paper.

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Abstracts should not exceed 250 words. The abstract should contain all the keywords and key phrases at least once and more than once if necessary. Search engines rank articles higher if the keyword or key phrase being searched appears more often in the abstract. However, pointless repetition may result in the page being rejected by a search engine. Since most researchers read an abstract before reading the paper, abstracts must be written very well.

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Select 3 or 4 keywords or key phrases that you would give a search engine if you were searching for your article. Avoid the use of general and plural terms, abbreviations, and non-descript words such as *and*, *of*, *or*, *the*, and so on.

When selecting keywords, please keep in mind how search engines operate. A search on the key phrase "women's health" does not yield the same result as separate searches on the words "women's" and "health". The ordering of keywords within a key phrase is also important if quotation marks are used because you are searching for words in a particular order. For example, a search for "women's health" is not the same as "health women's".

Clute Institute journal articles are downloaded an average of 120,000 times a month. Approximately 70% of these downloads come from Google searches, so the proper use of keywords and key phrases is important. Many universities use journal article citation analysis to evaluate the importance of faculty research. Hence, being quoted by other authors is important.

Headings

Four levels of headings are allowed. The first level should be **BOLD ALL CAPS**, second level **Bold**, third level *Italics*, and fourth Underlined.

Tables & Figures

Use the Microsoft Word table function to create tables, not spreadsheets. Tables and figures should be located in the text and numbered sequentially using Arabic numerals, i.e., Table 1 and Figure 1. We print our journals in black and white; please take this into consideration when using color.

Abbreviations

Abbreviations should be defined at first mention and used consistently thereafter.

Footnotes

Bottom of the page footnotes are preferred to end of the article endnotes.

References

References should be arranged alphabetically and follow American Psychological Association (APA) style. References should not be inserted as footnotes. References in the text should include name and year. For example: "According to Bangs (2012)..."

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Online journal article citation:

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Book citation:

Calfee, R.C. & Valencia, R.R. (1991). *APA guide to preparing manuscripts for journal publication*. Washington, DC: American Psychological Association.

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To whom it may concern

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14 October 2013

Dear Mr / Ms

Re: Language editing of dissertation: An analysis of grain producers' labour cost: The case of South Africa vs. Mozambique

I hereby declare that I language edited the above-mentioned manuscript by Ms Lehanri Saayman (21633525) from 30 September 2013 to 10 October 2013.

Please feel free to contact me should you have any enquiries.

Kind regards