Andrew Partridge
Senior Agricultural Economist

andrewp@elsenburg.com
(+27) 021 808 7633

Agricultural Employment after the Global Recession

An Analysis of Post-2008 Trends in Agricultural Employment in the Western Cape Province of South Africa

[DRAFT WORKING PAPER]

Andrew Partridge

Macro and Resource Economic Services
Western Cape Department of Agriculture

December 2014

CONTENTS

1. INTRODUCTION

> *"Not only our future economic soundness but the very soundness of our democratic institutions depends on the determination of our government to give employment to idle men"*
> (Roosevelt, 1938, p. 118)

South Africa has one of the highest unemployment rates in the world. In 2012, out of 175 countries for which data is available, South Africa had the sixth highest unemployment rate. This is according to modelled International Labour Organisation (ILO) estimates which put South Africa's unemployment rate at 25%. This is far above the 6% world average and below only that of Macedonia, Mauritania, Bosnia and Herzegovina, Lesotho and Spain (World Bank, 2014).

Unequal access to economic opportunities in South Africa is a legacy of the country's apartheid era during which the white minority elite oppressed and excluded the country's black majority (Bhorat, 2004; Badat, 2012). Since apartheid ended in 1994, the South African government has set about attempting to redress the wrongs of the past through numerous policy initiatives. Employment and improving access to economic opportunities is one area which has always been at the forefront of this policy drive. Most recently, the country's 2011 National Development Plan, sets out the vision for South Africa through to 2030. In the plan, the target is set to reach near full employment by 2030 through the creation of 11 million new jobs (NPC, 2011).

Reaching the NDP target will be extremely challenging. The labour market in its current state has shown itself to be incapable of providing the required employment growth and hence policy interventions are required to overcome the barriers which are constricting growth and put the economy onto a growth path which generates employment opportunities for the vast number of unemployed individuals in South Africa. But before policy interventions can be developed more knowledge is needed on labour market performance. For each subsector and each region employment trends need to be investigated, to see where progress has been good and to see where it is lacking. In some sectors this has been done to great effect, in others this is not the case. This paper looks to make the first steps in this regard in relation to the Western Cape's agricultural sector. It provides a very broad analysis of recent trends in agricultural employment in the Province.

This should then serve to provide the basis for more focused studies on specific areas in line with these findings. In this sense it is aimed more at providing the guidelines for where work should be focused in order to come up with concrete policy conclusions, rather than providing such conclusions itself

The next section of this paper gives a background to the study, providing the setting for the analysis. The following section then looks at issues with agricultural employment data and proposes a methodology for overcoming these issues. The study then analyses some key trends in Agricultural Employment in South Africa's Western Cape Province, the country's biggest source of gross farm income. Finally, the paper ends off with some conclusions to come from the analysis.

2. BACKGROUND

According to the World Bank (2014), between 2001 and 2010, South Africa's total employment rose by approximately 23%, rising to more than 14 million individuals in 2008 and then dropping off to just below 14 million by 2010. This is illustrated in Figure 1 below where the line shows the total employment numbers annually, measured on the primary left-hand y-axis. The bars on the graph represent agriculture's share in total employment each year, measured on the secondary right hand y-axis. The graph shows that whilst South African net employment has been steadily increasing, there has been a clear decline in agriculture's share therein.

Despite the decline in agriculture's importance for total employment, Figure 1 reveals that agriculture still provides employment for approximately 640 000 individuals. It is also the predominant source of livelihoods for individuals in rural areas. This is recognised in the National Development Plan, which also highlights the Sector's potential for job creation, claiming:

> *"Agriculture has the potential to create close to 1 million new jobs by 2030, a significant contribution to the overall employment target"*
> (NPC, 2011, p. 197)

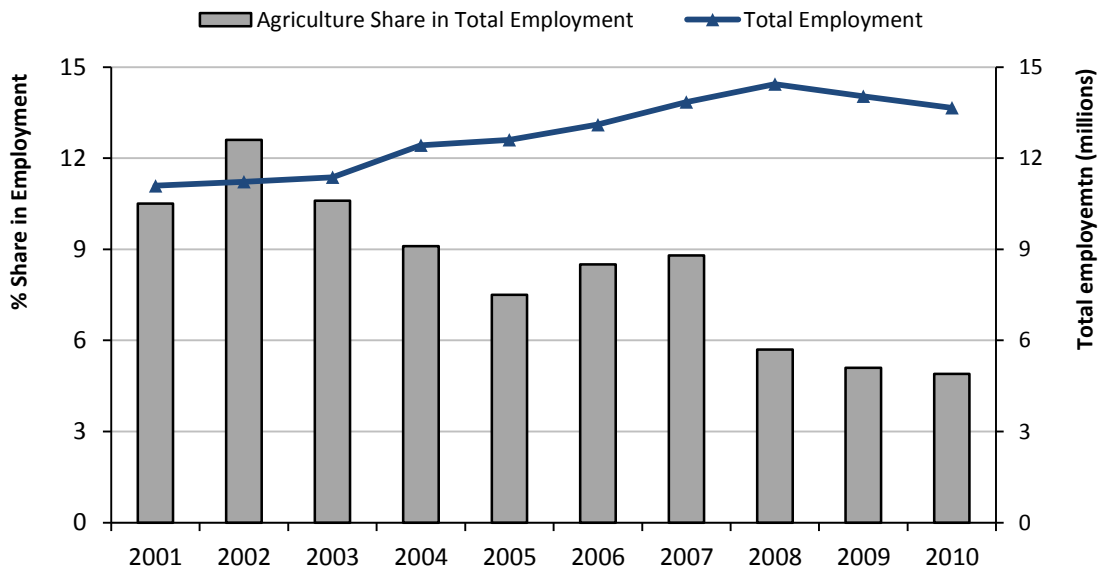

Figure 1: South Africa's Total Employment and Agricultural Share in Employment, 2000-2011

Source: Compiled using (World Bank, 2014)

Both the feasibility of the "1 million new jobs by 2030" objective being realised and the progress that has been made so far are difficult to assess due to reporting on agricultural employment performance in South Africa being extremely inconsistent in recent years.

As an example of this inconsistency, the National Minister of Agriculture, Forestry and Fisheries reported in the Sector's May 2013 Budget Speech that:

> *"The sector has been able to sustain the growth recorded in the previous financial year. Nationally, the sector created 54 000 new jobs between January and March 2013, an increase of 7.9% (and 12.7% year-on-year)"*
> (Joemat-Pettersson, 2013, p. 4)

Less than a year later, speaking at the February 2014 Agri-Sector Unity Forum (ASUF), the Minister was quoted as saying in relation to the country's Agricultural Sector:

> *"The drop in the number of farmers, the absence of young entrants to the sector, job losses, and the declining share of GDP, all point to a sector that has been in decline since the 1970s"*
> (Mokomele, 2014, p. 4)

This up and down inconsistency has become a common feature for reporting on agricultural employment performance in South Africa. The main issue with reporting is not a case of inaccurate information being reported but rather due to the nature of agricultural employment being one which is subject to much short term volatility. This volatility is evident from large spikes and variations in employment numbers as agricultural labour requirements change, annually in accordance with the different seasons and corresponding weather patterns, as well as year-on-year as weather differences lead to changes in yields (Hall, 1986; Alderman & Sahn, 1989). In addition to these fluctuations, agricultural employment is also subject to various other cyclical movements of more long-term frequencies (Gill, 2012).

Reporting agricultural progress based simply on the differences between two points can be very misleading. To illustrate this, consider the Minister's 2013 report of 54 000 new jobs being created by the country's Agricultural Sector between January and March 2013. This estimate was based on reliable data provided by Statistics South Africa (Stats SA), the country's national statistical service (Joemat-Pettersson, 2013). In August 2014 a press release by the Shadow Minister of Agriculture, Forestry and Fisheries, also citing Stats SA's data, claimed that the Sector had lost 73 000 thousand jobs since the second quarter of 2013 (DA, 2014).

The above reported performances are plotted in Figure 2 below as the dashed lines which join the relevant points for which employment was compared. The red line shows the net change in employment between January 2013 and August 2014. The graph shows that over the entire period there was a relatively small decline in agricultural employment, but instead what gets reported is a sharp rise in employment one year and then in the next year a dramatic drop in employment. This occurs due to there being a high point in March 2013 which was the end period for one analysis and the beginning point of the other.

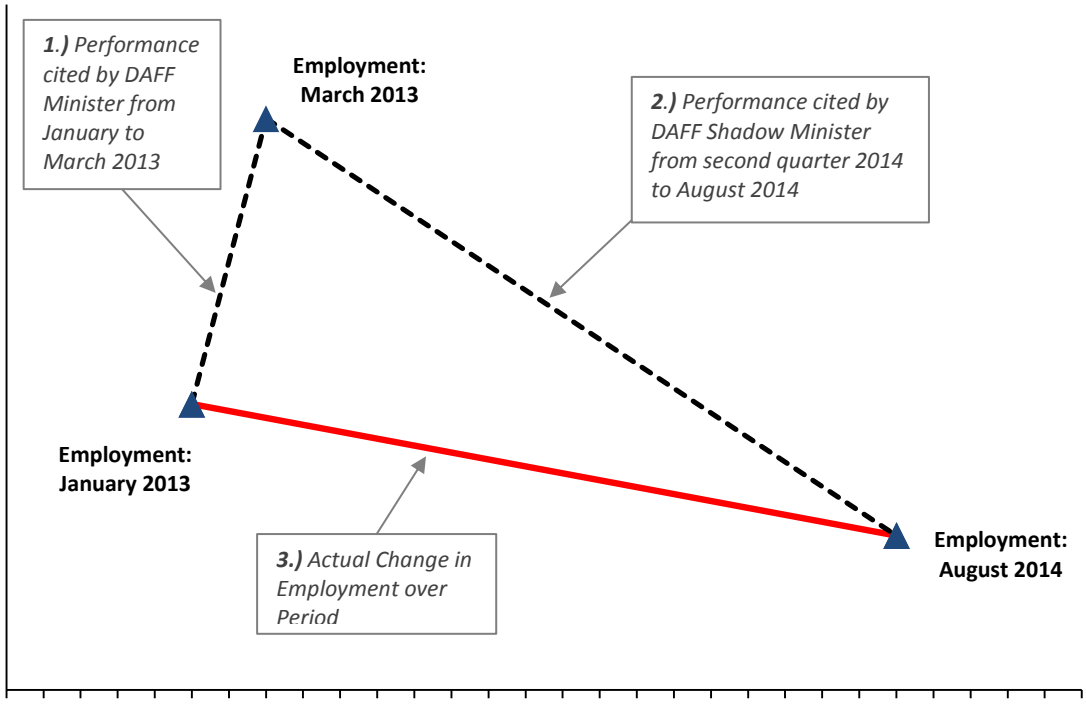

Figure 2: Agricultural Employment Numbers for Select Time Points

Data Source: Constructed from (Joemat-Pettersson, 2013) & (DA, 2014)

The above highlights the influence that the choice of dates has when looking at agricultural employment changes between two points. Later in this paper employment is plotted for every quarter over a period of several years which shows the volatile nature of agricultural employment and provides evidence of the spikes and variations discussed in this section. The cyclical variation in the data needs to be accounted for if meaningful conclusions about agricultural employment are to be realised. Whilst there are several methods in which this can be achieved, the method suggested and applied in this paper is to look at linear trends in employment over time. This methodology, explained in more detail in the next section, allows the overall long-run direction in which employment is moving to be assessed.

The application of this study is to the Agricultural Sector of South Africa's Western Cape Province. South Africa is very diverse in terms of agricultural production due to significant climate and soil differences across the country (Mucina & Rutherford, 2006). The crop mix of the Western Cape has particular relevance for job creation due to the concentration of labour-intensive agricultural industries. In the NDP specific industries are highlighted as having particular job-creating potential due to being labour-intensive and having high

growth prospects. The group of industries falling into this classification are predominantly horticultural industries, with the specific industries mentioned when discussing "large-labour intensive industries" including citrus fruits, grapes (table and dried), subtropical fruit and vegetables (NPC, 2011).

The 2007 Census of Commercial Agriculture revealed gross farming income from horticultural production of approximately R19 billion. This equates to approximately 24% of total gross farming income for the country's Agricultural Sector. The provincial breakdown of horticultural gross farming income is shown in Figure 3 below which highlights the concentration of this industry in the Western Cape. Overall, the Western Cape is responsible for approximately 43% of the industry's gross farming income, amounting to approximately R8 billion. Within the Western Cape, horticulture provides approximately 50% of the Province's gross farming income (Stats SA, 2007).

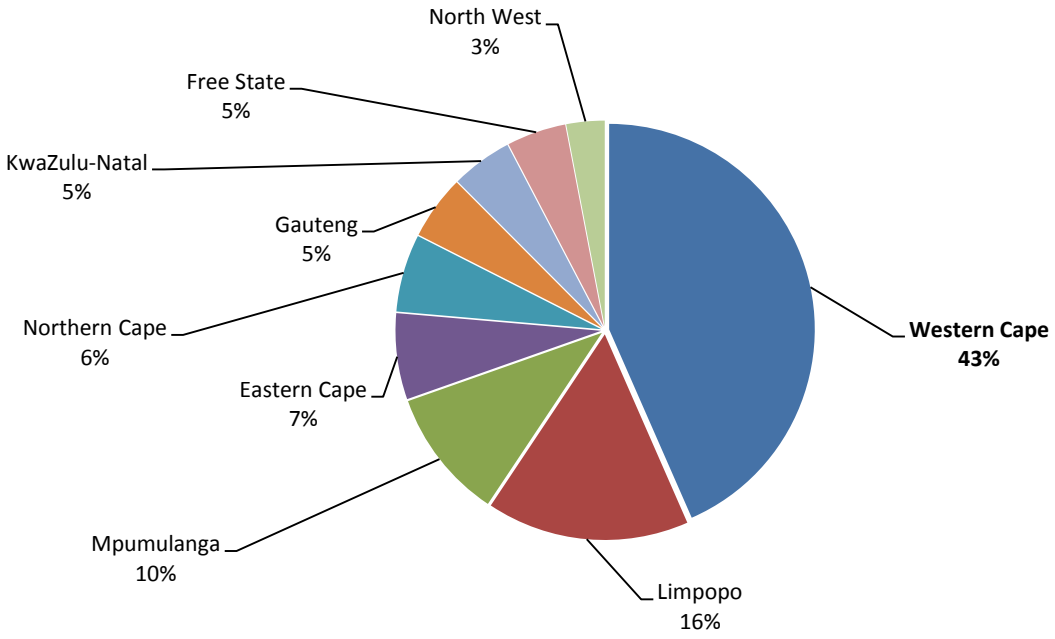

Figure 3: Provincial Breakdown of Gross Farming Income from Horticultural Production in South Africa, 2007

Source: Compiled Using (Stats SA, 2007)

The Western Cape is clearly extremely important for job creation in South Africa's Agricultural Sector and will be central to determining whether or not the country reaches

its ambitious "1 million new jobs" target for 2030. What is not so clear is what the current trend is, whether or not the Sector can continue as normal or whether change is required.

In the next section the erroneous nature of point-to-point measures of employment performance is highlighted and then a different methodology is suggested. This suggested methodology is then applied to the Western Cape's Agricultural Sector.

3. DATA AND METHODOLOGY

This paper utilises the Quarterly Labour Force Surveys (QLFS) carried out by Statistics South Africa (Stats SA, 2014a). The QLFS is a household-based sample survey on labour market activities, carried out every three months in South Africa since the beginning of 2008 (Stats SA, 2014b).

Data sampling weights are used which have been calculated to account for factors such as selection probabilities, non-responses and benchmarking based on South Africa's demographics (Stats SA, 2008). Following the census of 2011, the QLFS data was revised in order to reflect the census outcomes (Stats SA, 2012). This analysis uses this revised quarterly data from Statistics South Africa for the six year period beginning with the first quarter of 2008 and ending with the fourth quarter of 2013.

In the QLFS, an individual's employment status is defined as either "employed", "unemployed" or "not economically active" based on responses to several questions relating to labour market activity (Stats SA, 2008). This analysis is concerned with employment numbers and hence only looks at individuals classified as "employed". In line with reporting by Stats SA, only individuals who are of working age are observed, where working age is defined as between the ages of 15 and 64 years of age (Stats SA, 2014b).

The quarterly nature of the QLFS is particularly useful when looking at agricultural employment data due to being able to account for seasonality. Seasonality arises due to employment varying over the year as seasons change and labour requirements in production are not consistent over the year. This means that if employment is being measured annually then results could be very different depending on what time of the year employment is measured at.

To illustrate this more clearly, Figure 4 shows Western Cape Agricultural employment for each year between 2008 and 2013, with the four lines representing what the graph would look like using the four different quarters as the measurement point. Whilst there are some concurrent trends there are also some important differences. The differences are particularly evident when comparing annual employment measured in the first and fourth quarters. Looking at the change from 2009 to 2010, if the first quarter is used as the measurement point there is a sharp increase in employment. However, if the fourth quarter is used there is a decline in employment over this period. Conversely, between 2012 and 2013 employment measured at the first quarter declined whereas the measurement at the fourth quarter shows a significant employment increase. Over the entire period, from the 2008 to 2013, employment measured at the first quarter declined substantially by approximately 26%. If, however, the fourth quarter is used for annual measurements, employment over this period actually increases by approximately 15%.

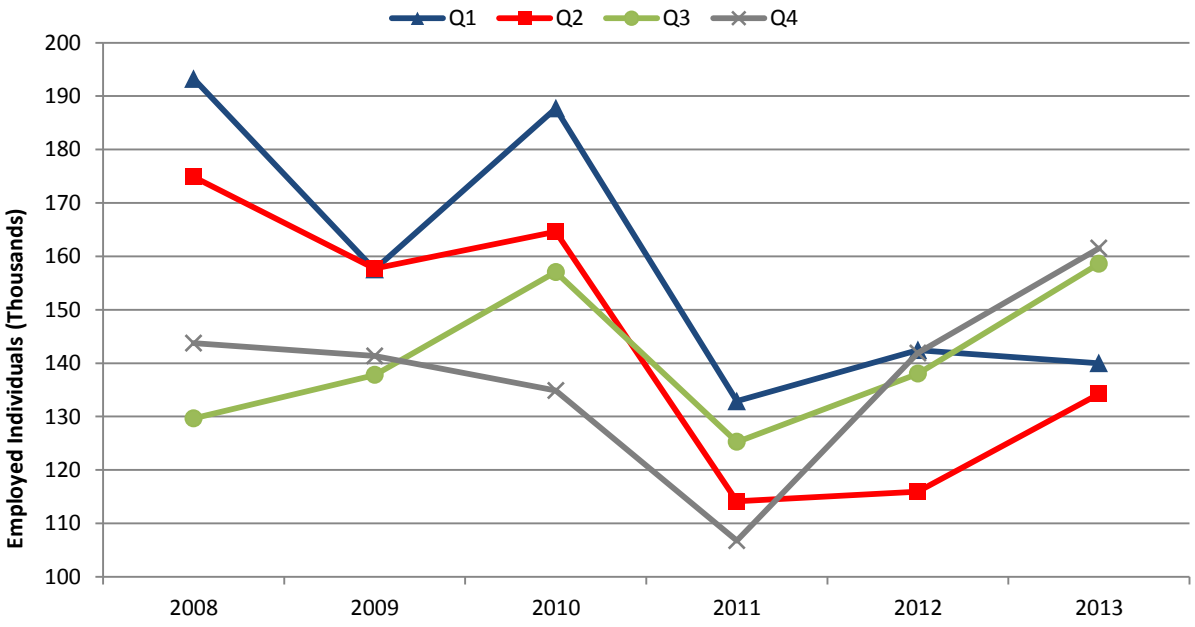

Figure 4: Agricultural Employment in the Western Cape by Quarter, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

What was made clear in the previous is that agricultural employment goes through short-term fluctuations which lead to misleading reporting of agricultural employment performance when only point-to-point differences are observed. To accurately assess

employment performance thus requires a method to remove the fluctuations and focus on the actual trends in the data

If "*t*" is allowed to represent the time period used in the data, with *n* time periods, then the relationship between time and employment can be represented linearly by:

$$Y_t = \beta_0 + \beta_1 t + \mu \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad [1]$$

Where:
- t = Time period (quarter) = {1,2,3,……..,*n*}
- Y_t = Employment in period *t*
- β_0 = Intercept on y axis (employment when t=0)
- β_1 = Slope coefficient (shows how much employment changes per period (quarter)
- μ = Random error term (the amount each data point deviates from the linear trend)

The linear trend in Y_t can be calculated using simple linear regression to obtain values of β_0 and β_1. The linear trend of employment, Y'_t, over time *t* can then be calculated as:

$$Y'_t = \beta_0 + \beta_1 t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad [2]$$

This linear trend Y'_t will give a much more accurate idea of the direction employment is moving in rather than looking at point to point.

To illustrate with a simple hypothetical example, imagine ten time periods (*t* = 1,2,3,….,10), with two employment series, S1 and S2. The employment numbers, measured in thousand individuals, for the two series for each time period are shown in Table 1 below. These numbers are then plotted as line graphs in Figure 5. The line graphs show a clear divergence between the two series, with S1 seemingly exhibiting a downward trend whilst S2 seemingly exhibits an upward trend.

Table 1: Hypothetical Employment Numbers (thousand individuals) for S1 and S2

Source: Hypothetical Data

Time Period (t)	S1	S2
1	9	15
2	10	12
3	12.5	16
4	6	17
5	7	14
6	4	16
7	8	15
8	5	17
9	3	19.9
10	2	19

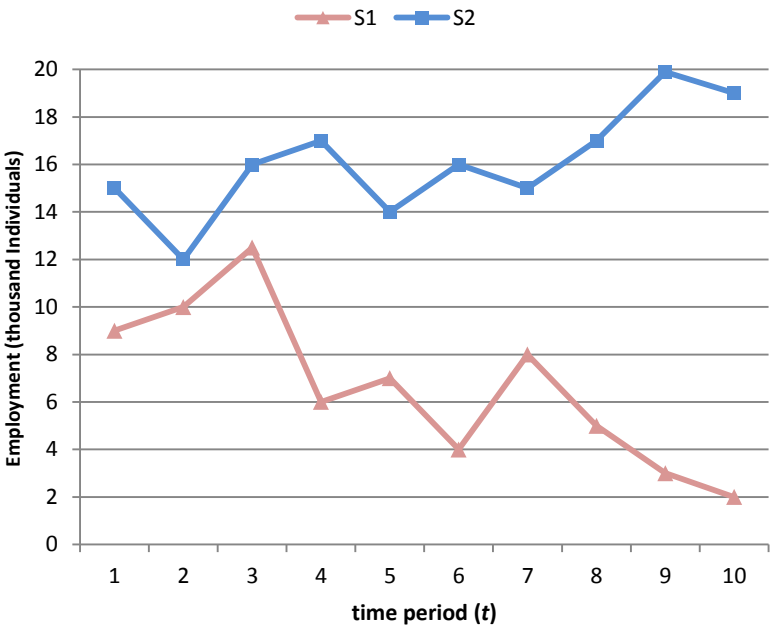

Figure 5: Employment in Hypothetical Series S1 & S2, *t*=1-10 (thousand individuals)

Source: Own Calculations from Hypothetical Data

To get a clearer idea of the trends, the technique of regressing over time described in this section can be used. For each series, S1 and S2, a simple linear regression is carried using the data in Table 1 with employment as the dependant variable and the time period as the independent variable, as in equation [1] above. The resulting coefficients from the regressions are shown in Table 2 below. The intercept for S1 is lower than S2, showing the trend in S1 begins at a lower point than S2. The slopes then show how employment moves over the time period. For S1, the slope is equal to -0.89, meaning that the employment trend declines, on average, by 0.89 thousand jobs every period. For S2, the slope is equal to 0.56, meaning that the employment trend is increasing by 0.56 thousand jobs every period.

Table 2: Coefficients from Regressions of Hypothetical Series S1 & S2 Over Time

Source: Hypothetical Data

	S1	S2
Intercept (β_0)	11.53	13.01
Slope (β_1)	-0.89	0.56

The coefficients from Table 2 can be plugged into Equation [2] to get trend lines for each series. These will be as follows:

- S1: $Y'_t = 11.53 - 0.89t$ ..... [3]
- S2: $Y'_t = 13.01 + 0.56\,t$ ..... [4]

These equations can be used to calculate the trend values for each time period *t*. This is done for both series and the resulting values are displayed in Table 3.

Table 3: Hypothetical Employment Numbers, Actual & Trend (thousand individuals) for S1 and S2
Source: Hypothetical Data

Time Period (t)	S1		S2	
	Actual	Trend	Actual	Trend
1	9	10.6	15	13.6
2	10	9.8	12	14.1
3	12.5	8.9	16	14.7
4	6	8.0	17	15.3
5	7	7.1	14	15.8
6	4	6.2	16	16.4
7	8	5.3	15	16.9
8	5	4.4	17	17.5
9	3	3.5	19.9	18.0
10	2	2.7	19	18.6

The employment trends, and how they fit the actual data, can be difficult to assess by looking at numbers in a table as provided in Table 3. However, graphically the trends become much clearer. To illustrate this, Figure 6 plots the data from Table 3 as line graphs. The dashed lines represent the linear trends and clearly show the divergence between the two series.

The hypothetical example provided a very simplistic illustration. As such the trends were to some extent observable when looking at Figure 5 without the trend lines. In the next section when looking at actual data, the trends are not so obvious and hence it becomes necessary to use trend lines to get an idea of how employment is changing over time. As shown, the trends also allow comparison of how steep different slopes are to assess the relative speed of change happening.

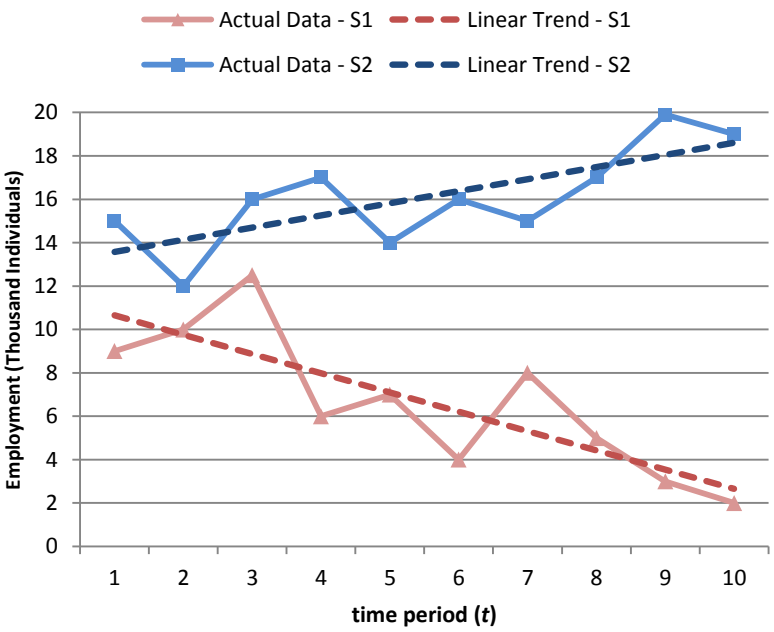

Figure 6: Employment, Including Trends, in Hypothetical Series S1 & S2, t=1-10 (thousand individuals)

Source: Own Calculations from Hypothetical Data

The regression analysis also allows the coefficient of determination, or r^2, to be calculated. The coefficient of determination gives an indication of how well a regression line fits the actual data by measuring the proportion of variation in the Y variable which is explained by the regression model (Gujarati, 2003). Thus r^2, which takes on a value between 0 and 1, gives an indication of the stability of the employment numbers. If r^2 is high, the trend line fits the data well, indicating that the employment figures do not deviate substantially from the trend line and employment for that particular group is relatively stable. If r^2 is low, the trend line is less of a good fit to the data, indicating that employment for that particular group is relatively unstable, with strong deviations from the linear trend line.

In the hypothetical example, the regression for S1 has an r^2 of 0.66, whilst the regression for S2 has an r^2 of 0.54. This suggests that S1 is a more stable employment series along the trend, although the two series are relatively similar in this regard. This is illustrated in Figure 7 below which plots the r^2 values for the corresponding hypothetical series. As the r^2 value is a measure of stability, the graph suggests that Series S1 is more stable around the trend line, whereas S2 exhibits more volatility.

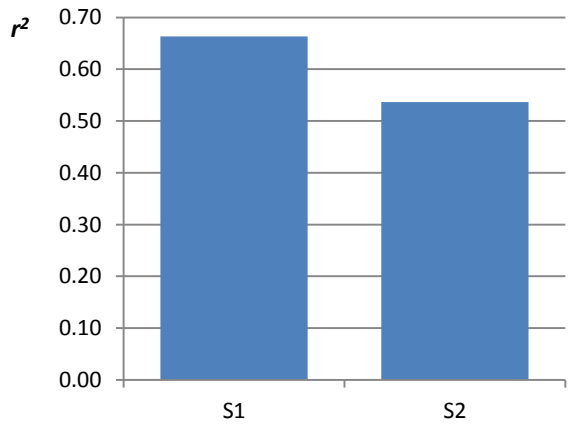

Figure 7: Coefficient of Determination (r2) for Employment Regressions from Hypothetical Series S1 and S2

Source: Own Calculations from Hypothetical Data

In addition to looking at trends in employment numbers for different groups, the study also analyses changes in the structure of the workforce in terms of rural concentration, demographics, informal employment, the terms of individual's employment and their educational attainment. Where the focus is on one particular group, such as rural employment or female employment, the change over time can simply be illustrated through plotting that group's share in total employment over time and observing the linear trend over time. If, in our hypothetical example, the interest was in S1's share in total employment, S1's share and the trend therein would be as calculated in Table 4 which shows employment for Series S1 and S2, the total employment (The sum of S1 and S2), and the S1's share in the total and the linear trend in the share values over time.

Table 4: S1 Share in Hypothetical Employment Series

Source: Hypothetical Data

Time Period (t)	Employment			S1 % Share in Total	
	S1	S2	Total	Actual	Trend
1	9	15	24	38	44
2	10	12	22	45	41
3	12.5	16	28.5	44	37
4	6	17	23	26	34
5	7	14	21	33	30
6	4	16	20	20	27
7	8	15	23	35	23
8	5	17	22	23	20
9	3	19.9	22.9	13	17
10	2	19	21	10	13

The information from Table 4 above can be illustrated graphically as in Figure 8 below. The bars show the actual share in employment and the dotted line shows the linear trend over time. In the hypothetical example there is a sharp fall in the share of S1 in total employment. This would be expected given the increasing trend in S2 and the decreasing trend in S1 as shown in Figure 6 earlier. Later when actual employment data is used the trend in the share will not be so obvious from the outset and hence it is helpful to construct a graph like the one shown in Figure 8 below.

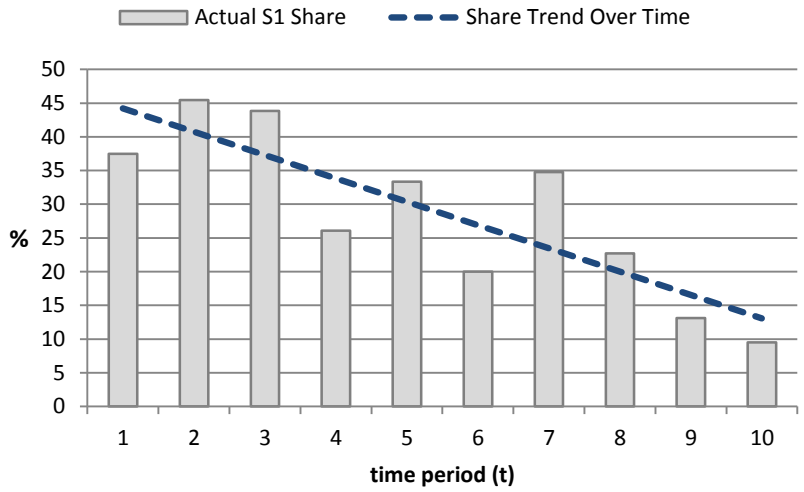

Figure 8: Series S1 Share in Total Employment and the Trend Over Time, t=1-10

Source: Own Calculations from Hypothetical Data

Where there are numerous groups under observation, such as 5-year age cohorts or educational attainment, then a graph like Figure 8 is not sufficient for the analysis and pie or pyramid diagrams are used to compare the change in the structure of the workforce in terms of a particular variable by looking at the breakdown at the beginning and end of the period under review. To make sure that there are no short-term fluctuations being picked up, this requires that the breakdowns be constructed from trends rather than actual data. To accomplish this, employment numbers for each group are regressed over time to get each group's linear trend. The numbers for each group's trend at the beginning of the review period are then used to calculate the breakdown in that period and the same for the last period.

Going back to the hypothetical example, if real data were used to calculate the breakdown at *t*=1, then the result would pick up some of the short-term fluctuations. To illustrate this, Figure 9 shows the breakdown of employment by series using both the actual data and the trends. In the actual data, S1 makes up 37% of total employment, whereas using the trends the share is 44%. This difference can significantly influence the outcomes of the analysis and hence to ensure accurate conclusions are drawn, breakdown comparisons between two different time periods are applied to trends rather than actual data.

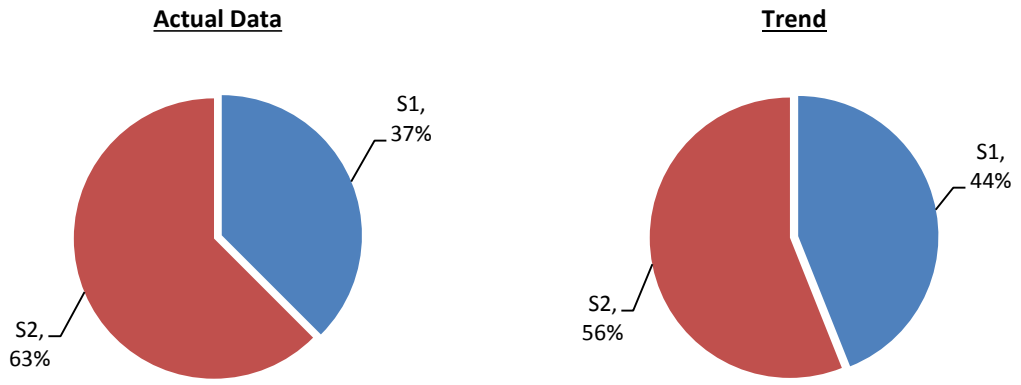

Figure 9: Hypothetical Example: Breakdown of Employment by Series for Actual Data and Trend, *t*=1

Source: Own Calculations from Hypothetical Data

The first period for which the QLFS data is available is the first quarter of 2008, this is thus used as the first data period (i.e. where *t*=1). It was illustrated in Figure 4 that the seasonal aspect of agricultural production means there are significant employment fluctuations within a year period and hence the data is different for each quarter of the year. For this reason it was decided that it was important to have equal representation from each quarter, that is, the full period under review must be an exact set of years. Hence, whilst data is available for 2014, as the complete year is not available, the final period chosen was the fourth quarter of 2013 (i.e. where *t*=*n*). This means that the full period under review is from the beginning of 2008 to the end of 2013. This entails a total of twenty-four time periods (*n*=24), covering six years. The rate of change in employment in this study is expressed in job gains or losses per year. This is calculated from the trend lines, taking the

difference between the trend value for the fourth quarter of 2013 and the first quarter of 2008 and dividing through by six, unless otherwise specified.

In what follows the methodology discussed thus far is used to identify employment trends in the Western Cape Agricultural Sector. After this the paper ends off with some concluding comments.

4. WESTERN CAPE AGRICULTURAL EMPLOYMENT TRENDS

Figure 10 shows agricultural employment in the Western Cape from 2008 to 2013. Despite some positive periods, the overall trend has been a decline in employment, illustrated through the downward-sloping, dashed trend line. At the current trend the Sector is shedding, on average, almost 4.5 thousand jobs every year.

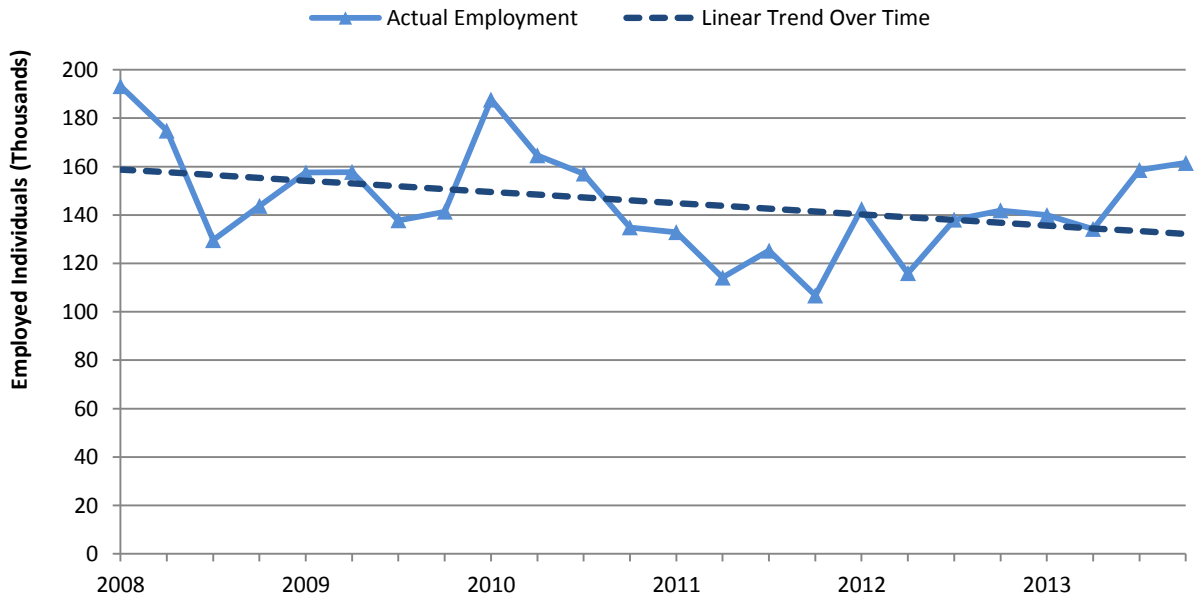

Figure 10: Agricultural Employment in the Western Cape

Source: Compiled using own calculations and data from (Stats SA, 2014a)

In addition to identifying the recent trend in agricultural employment in the Western Cape since 2008, Figure 10 also gives support for using trends rather than point-to-point changes.

Observing the graph, the short-term cyclical variation in agricultural employment which has been discussed in this paper is clear from the fluctuations in the graph. It is made even clearer if a pair of points on the graph is chosen and a line drawn between these two points. If then another pair is chosen and the same done, and another, and another, and so on, then the lines can differ so substantially. Generally, just over the six year period analysed, any employment story can be told depending on the time period chosen to focus on.

As an example, take the first and fourth quarters of 2011. Over this period employment declined approximately 20%, shedding around 26 thousand jobs. This is shown graphically in Figure 11 below which shows agricultural employment in the Western Cape just for the quarters between the first quarter of 2011 and the first quarter of 2012. The solid blue line shows the change being discussed, joining the first and last quarters of 2011. If, the analysis shifts just one quarter forward, keeping the same time frame so now instead look at the change from the second quarter of 2011 and the first quarter of 2012, the result is the red dashed line in Figure 11. Now instead of the significant decrease, employment increases approximately 25%, creating around 28 thousand jobs.

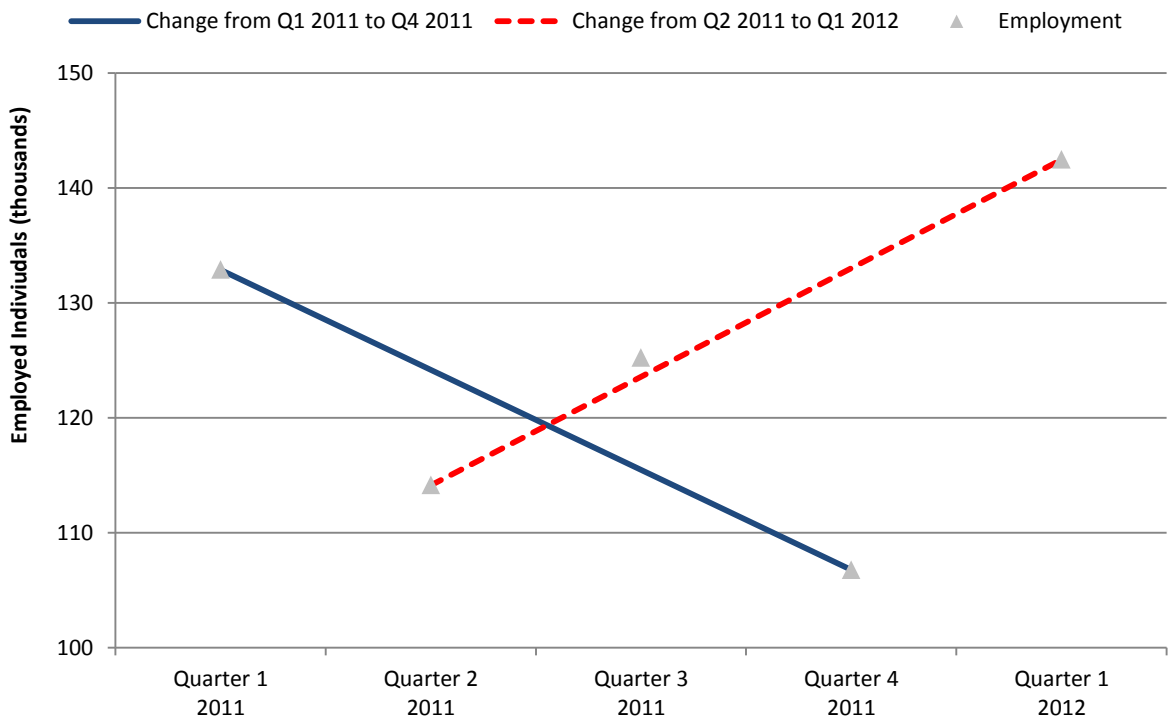

Figure 11: Western Cape Agricultural Employment Between Q1 2011 and Q1 2012

Source: Compiled using own calculations and data from (Stats SA, 2014a)

The above issue is addressed through observing the trend in employment over time. The trend gives a smooth transition over time and isn't subject to the misleading conclusions which could be reached due to short term fluctuations as illustrated in this paper. In this case the trend shows that overall Western Cape Agricultural employment has been steadily declining since the beginning of 2008.

Provincially, the Western Cape is South Africa's biggest agricultural employer in each quarter between 2008 and 2013, with the province's share in the country's total agricultural employment ranging between approximately 16% and 27%. This is displayed in Figure 12 which shows the Western Cape's share in South Africa's total agricultural employment for each quarter between 2008 and 2013. The graph shows a slight downward trend, showing that despite remaining the biggest agricultural employer provincially, the Western Cape is losing importance in this regard. The trend line suggests that the Western Cape's share in total agricultural employment is declining by approximately 0.25 percentage points each year.

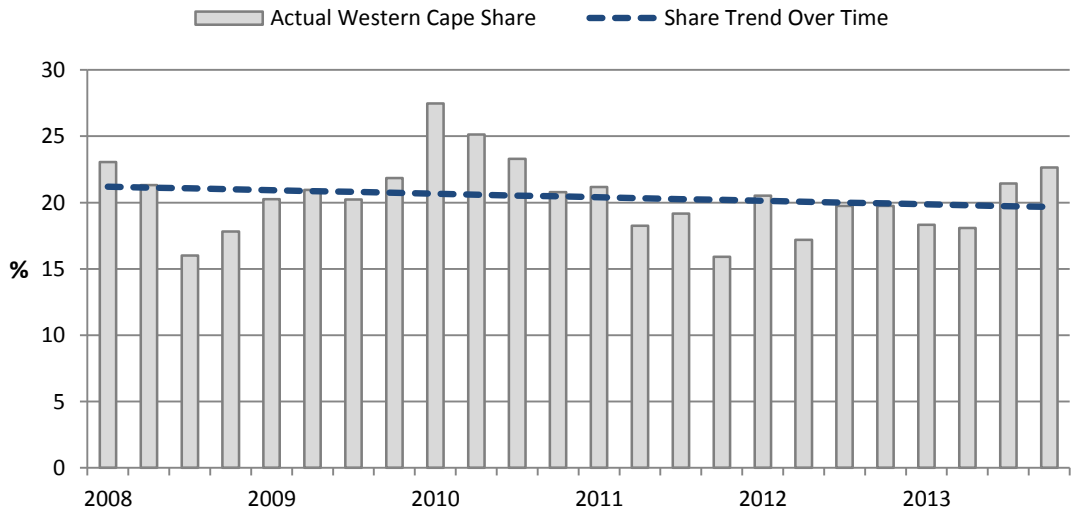

Figure 12: Western Cape's Percentage Share in South Africa's Agricultural Employment, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

If the employment figures are broken down into rural and urban dwellers, there is a distinct difference between the two trends. This is illustrated in Figure 13 which shows agricultural employment for rural and urban dwellers in the Western Cape. Despite the fact that, as

shown in Figure 10, the Sector has been shedding almost 4.5 thousand jobs a year overall, in rural areas where most agricultural activity is situated, agricultural employment has remained relatively stable, declining very slightly at 165 jobs per year. The rest of the almost 4.5 thousand jobs being lost each year are in the urban agricultural sector.

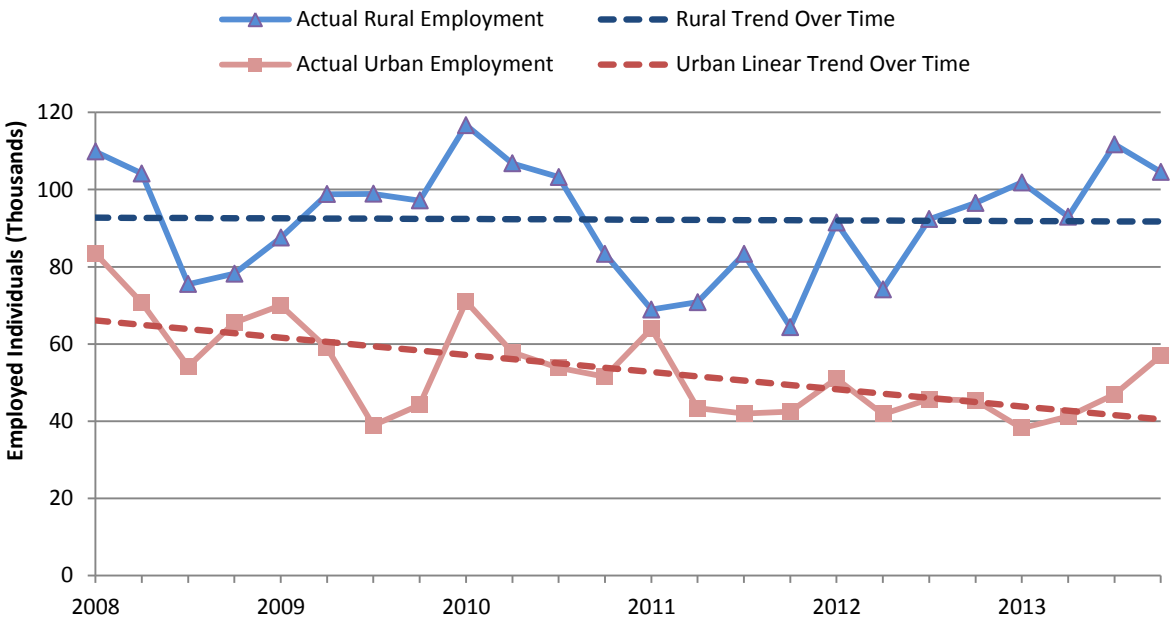

Figure 13: Rural vs Urban Agricultural Employment in the Western Cape, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

The divergence between the two curves in Figure 13 is also evident in Figure 14 below which shows the share of Western Cape agricultural workers who reside in rural areas. The series shows a clear upward trend which increases at approximately 2% each year.

Whilst the general trend in Western Cape agricultural employment is a negative one, there should be some solace in the fact that the decline has not been a characteristic of agriculture in rural areas. In South Africa's national development plan the vision for the development of the country's agricultural sector focuses on the integration of the rural economy and the generation of improved economic opportunities for individuals in rural areas (NPC, 2011).

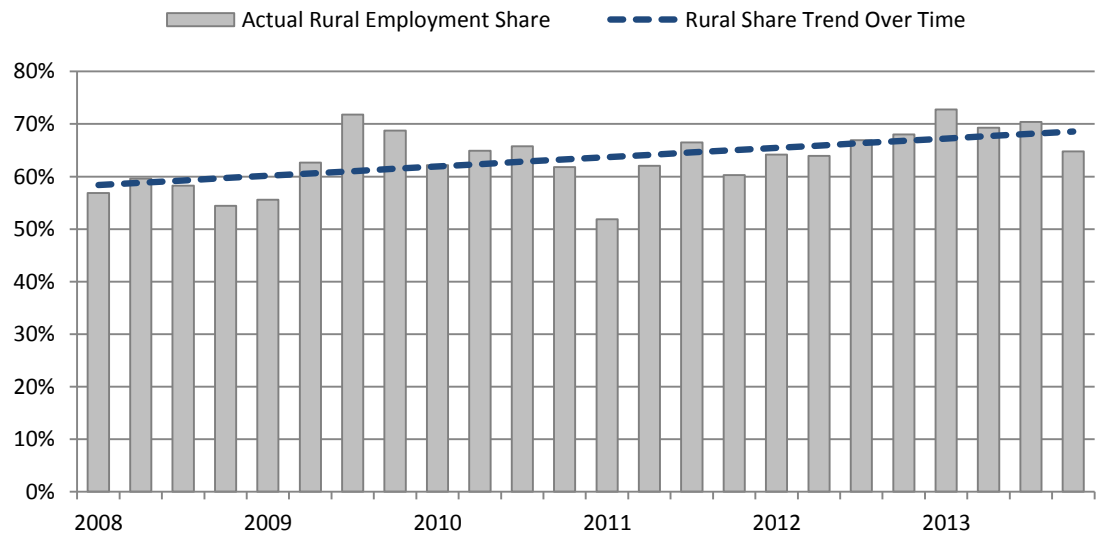

Figure 14: Rural Share in Western Cape Agricultural Employment, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

Now that the general trends in Western Cape agricultural employment have been identified, the study looks to break down employment in terms of a number of factors. This is done in an attempt to identify any structural shifts in agricultural employment since 2008 and also get an idea of the nature of jobs being created and lost.

4.1. Demographics

The legacy of the apartheid in South Africa has led to an economy where the accesses to opportunities are skewed along demographic lines (Bhorat, 2004; Badat, 2012). Whilst substantial progress has been made in a number of areas, massive inequalities still exist and hence there is a need for measures which specifically target the inequalities. In the National Development Plan, there is a specific focus on improving employment opportunities for black individuals as well as women and the youth (NPC, 2011).

The Broad-Based Black Economic Empowerment (B-BBEE) Act of 2003 provides the legislative framework to promote black economic empowerment. According to the Act, "'black people' is a generic term which means Africans, Coloureds and Indians" (RSA Presidency, 2003, p. 4). Most agricultural employees in the Western Cape are coloured, with the share in the quarterly employment data ranging between 55% and 82% of total agricultural employment.

Figure 15 breaks down Western Cape agricultural employment into African, coloured and white individuals. The amount of agricultural employment in the Western Cape for individuals classified as "Asian" was negligible and so was not included in the analysis. There were no other recorded race groups so the analysis just concentrates on those three groups already discussed.

All groups exhibited a declining trend in employment. The decline was steepest for coloured individuals where employment declined at a rate of approximately 2.1 thousand jobs per year. The decline was least steep for white employment which fell at approximately 0.8 thousand jobs per year. African employment fell at approximately 1.5 thousand jobs per year. In terms of the percentage decline in the trends over the six year period, the opposite is true due to different base amounts at the beginning of 2008. In this regard white employment fell the most, with the trend declining by approximately 28% between the beginning of 2008 and the end of 2013. This is compared to 26% for African employment and only 12% for coloured employment.

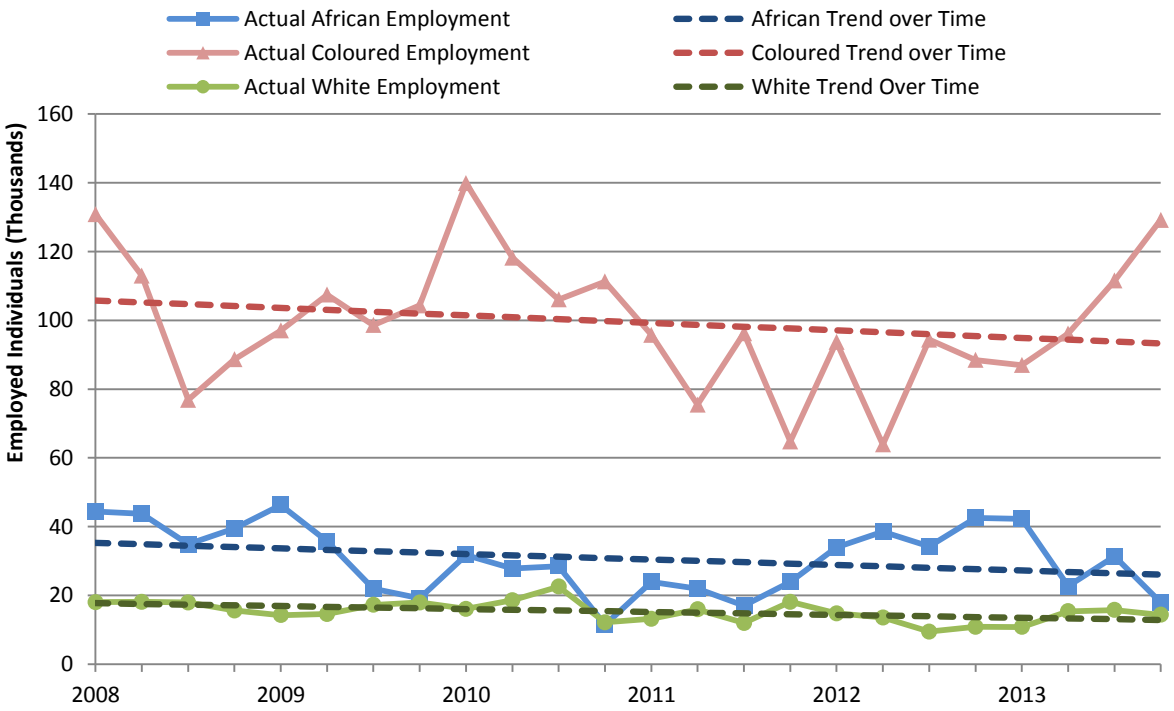

Figure 15: Western Cape Agricultural Employment by Race Group, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

The trends observed in Figure 15 results in very little change in the racial composition of agricultural employment in the Western Cape. This is illustrated in Figure 16 below which shows the racial composition of agricultural employment in the Western Cape according to the trend lines. There was a slight increase in the share of employment of coloured individuals at the slight expense of white and coloured employment.

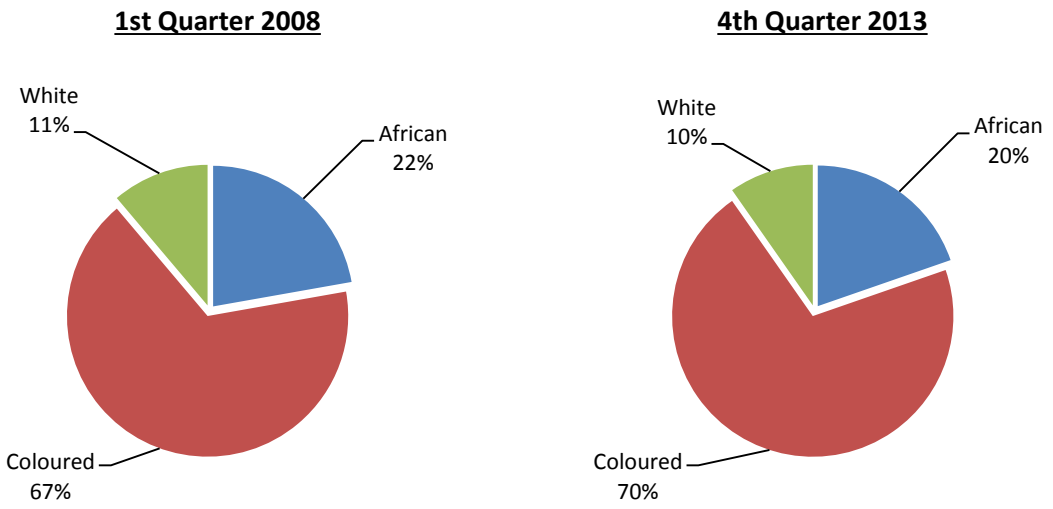

Figure 16: Racial Composition of Western Cape Agricultural Employment For Q1 2008 and Q4 2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

It is also evident from Figure 15 there are distinct differences in the amount of variation around the different trend lines. The stability of employment along its trend can be analysed using the coefficient of determination (r2) as discussed in the "Methodology" Section. Figure 17 shows the coefficient of determination for each of the regressions used to generate the linear trend lines for the three different race groups in Figure 15. The graph clearly shows that there is more stability in the employment figures for white individuals and that employment figures are the least stable for coloured individuals.

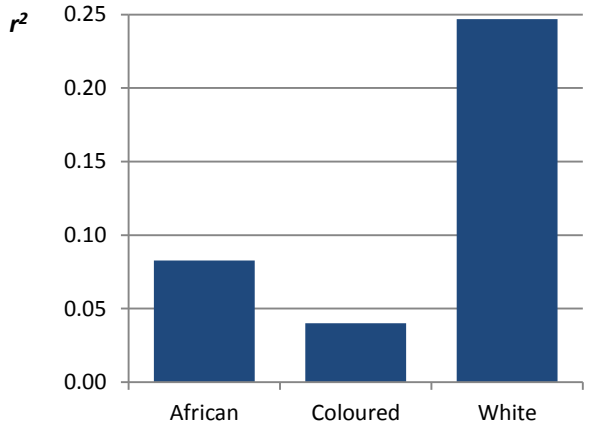

Figure 17: Coefficient of Determination (r^2) for Employment Trend Regressions by Race Group

Source: Compiled using own calculations and data from (Stats SA, 2014a)

In a recent analysis of labour market trends in South Africa by Banerjee et al (2008), it was found that males have had a higher participation rate than women and a lower prevalence of unemployment. However between 1995 and 2005 there was clear evidence of the gap narrowing. Over the ten year period women labour market participation increased at a faster rate that of males and there was a significant increase in the female share in the total labour force. Despite this progress, there are significant differences in both access to and the returns from employment opportunities across genders. Specifically, recent studies have found that women earn less than men and are less successful in finding employment, meaning that women unemployment exceeds male unemployment (CGE, 2010). The National Development Plan recognises the disproportionate lack of opportunities for females. The plan states:

> "*Gender discrimination remains a major problem in several social and economic settings, including the workplace, the family and educational institutions*"
> (NPC, 2011, p. 419)

Male employment in the Western Cape Agricultural Sector exceeded female employment in each quarter under review, with female employment ranging between approximately 27% and 42% of total employment. The male and female employment for each quarter between 2008 and 2013 are shown in Figure 18. The linear trends reveal a degree of convergence. For both genders there is a negative trend, evident by the

downward sloping trend lines. However, the male trend line is almost three times steeper than the female trend line, indicating more jobs being lost to males than to females. The trend in male employment declined by 2.6 thousand jobs per year and decreased by 19% over the six year period. The trend in female employment declined by 1.2 thousand jobs per year and decreased by 13% over the 6 year period.

Figure 18: Male and Female Agricultural Employemnt in the Western Cape, 2008 to 2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

Figure 19 shows the female share in Western Cape agricultural employment from 2008-2013. The convergence suggested by Figure 18 is further supported through an increasing trend in the female employment share. This is illustrated through the upward sloping trend line which increases by approximately 0.29 percentage points each year.

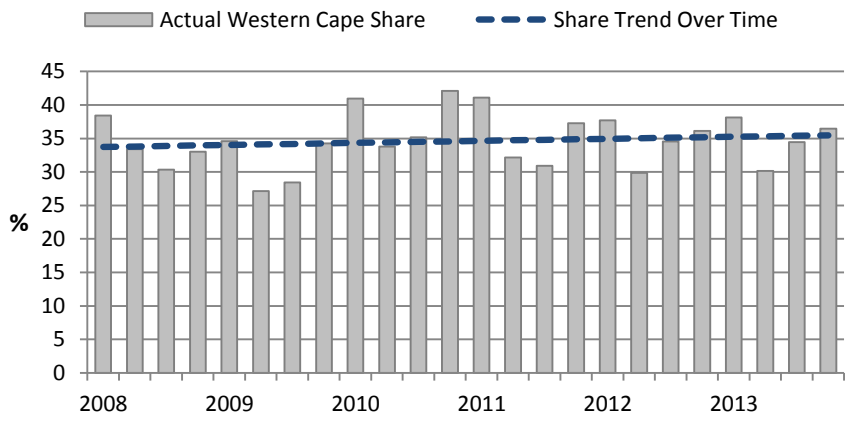

Figure 19: Female Share in Western Cape Agricultural Employment, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

High youth unemployment is a big concern in South Africa and has been for a number of years (Lam, et al., 2009; Banerjee, et al., 2008). The country's NDP draws specific attention to the youth with regards to South Africa's employment needs, stating:

> *"We require urgent measures to address our most pressing needs, particularly high levels of unemployment, especially among the youth"*
> (NPC, 2011, p. 1)

Studies have shown that historically the failure of youth to find employment tends to lead to a loss of self-esteem, deterioration of physical health and a change in the expectation about finding employment. These factors, in turn, tend to negatively impact on job searching strategies which lowers the probability of finding a job, confirming beliefs and leading to a vicious cycle of unemployment (Furnham, 1985). During early working years individuals are more flexible and thus easier to train and more likely to be influenced in terms of their behavioural patterns. Thus long periods of unemployment during early working years can seriously impact on a worker's productive potential for future years. Youth unemployment is also associated with drug abuse and crime; two issues which tend to persist and have serious individual and social costs (O'Higgins, 1997; O'Higgins, 2001).

To better understand employment dynamics for different age groups, Figure 20 breaks down Western Cape agricultural employment into three groups: 15-29 years old, 30-44 years old and those that are over 45 years of age. Most agricultural employees are

between the ages of 30 and 44 years of age, accounting for between 43% and 59% of total Western Cape Agricultural Employment depending on the period.

Each age group exhibited a downward trend over the period under review. Despite accounting for most of employment in the Sector, the age group 30-44 years old contributed least to job losses, with the trend declining by approximately 1.1 thousand jobs each year. The greatest job losses came from the youngest age group, 15 to 29 year olds, which saw a declining trend equating to job losses of approximately 2 thousand jobs per year. The number of employed individuals aged 45 or over declined at approximately 1.4 thousand jobs per year. Between the beginning of 2008 and the end of 2013, employment of those aged between 15 and 29 years of age, fell by 26%. Employment for individuals aged between 30 and 44 fell by 9% and employment of individuals older than 45 years of age fell by 22% over the six year period.

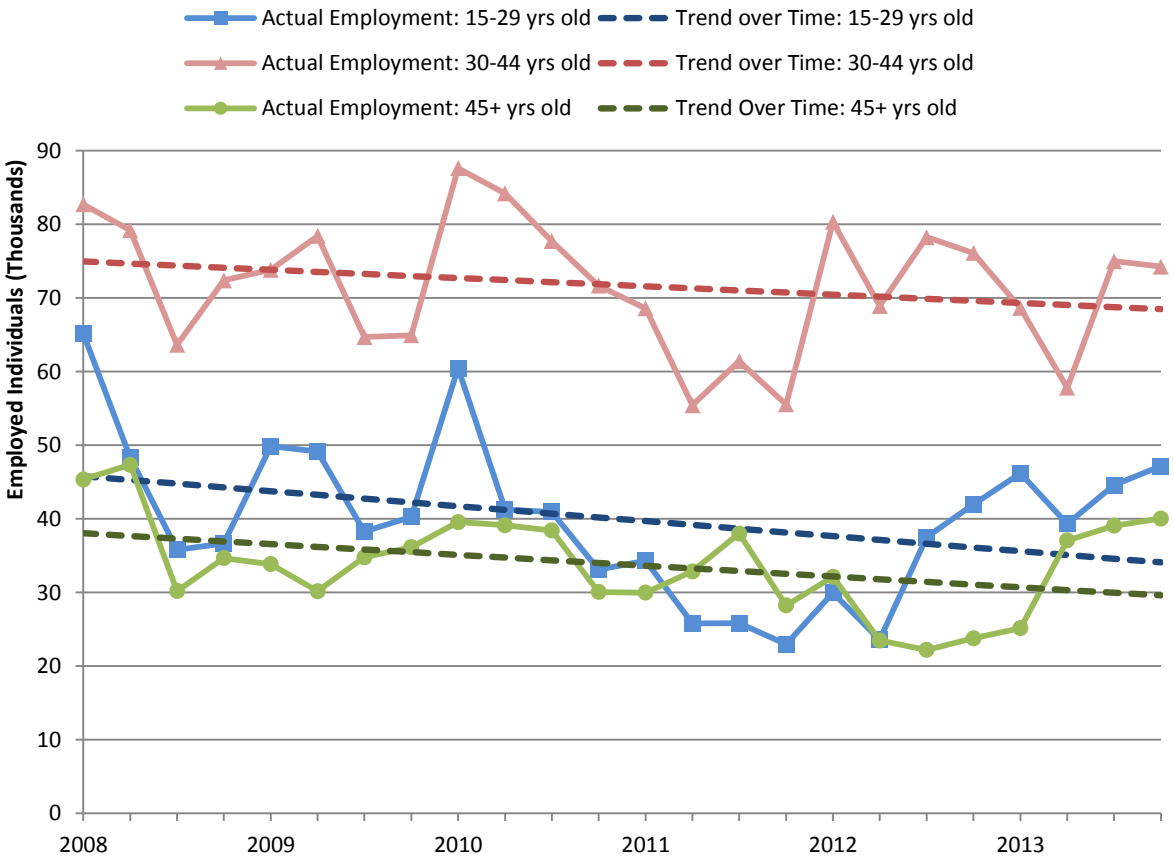

Figure 20: Western Cape Agricultural Employment by Age Group, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

Breaking down the sample further into smaller age cohorts gives further insight into the age distribution of the employed labour force in the Western Cape Agricultural Sector. Figure 21 shows this age breakdown in five year age cohorts for the first quarter of 2008 and the fourth quarter of 2013 according to the calculated linear trends. The graph shows significant changes in the age structure of the workforce. As a general observation, there is a move away from the poles, the really young and the really old and a substantial increase in the proportion of the workforce between the ages of 25 and 34.

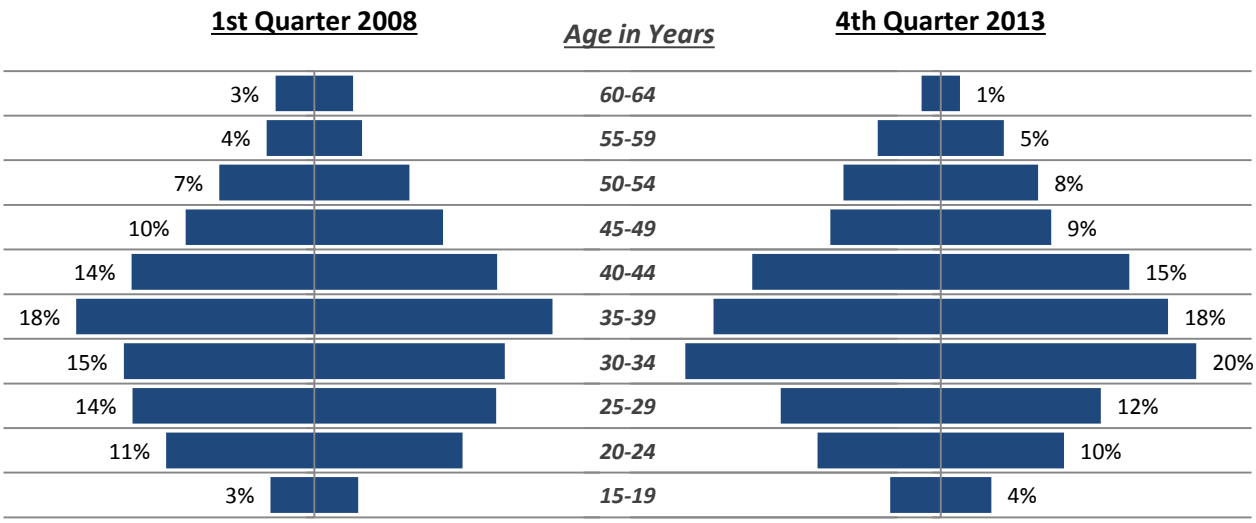

Figure 21: Changing Trend in Age Breakdown of Employed Agricultural Labour Force in the Western Cape

Source: Compiled using own calculations and data from (Stats SA, 2014a)

The breakdown of employment by demographic factors reveals that the experiences of employment changes in the Western Cape Agricultural Sector have not been homogenous with the impacts being different for different demographic groups. In particular, employment for coloured individuals fell at the fastest rate in terms of job loss numbers, but due to making up the majority of the workforce, the percentage decline over the six years under review was lower than that of the other groups. Conversely white employment fell at the slowest rate in terms of job loss numbers, but due to being a much smaller fraction of total employment, the percentage decline over the six year period was greatest. African employment sat in between the two for both measurements.

There were clearer shifts in employment along gender and age lines. Female employment fell significantly slower than male employment between the beginning of 2008 and the end of 2013, resulting in an increasing share of female employment in total Western Cape agricultural employment. Youth employment fell particularly fast as well as, to a lesser extent, employment amongst the very old, resulting in an increased proportion of the workforce which is middle-aged.

4.2. The Informal Sector

The International Labour Organisation (ILO) bases its classification of the informal sector on "*The Resolution Concerning Statistics of Employment in the Informal Sector*" adopted by the Fifteenth International Conference of Labour Statistics (ICLS) in 1993:

> *"The informal sector may be broadly characterized as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes to the persons concerned. These units typically operate at a low level of organization, with little or no division between labour and capital as factors of production and on a small scale. Labour relations – where they exist – are based mostly on casual employment, kinship or personal and social relations rather than contractual arrangements with formal guarantees."*
>
> (ILO, 2013, pp. 11-12)

The informal sector is often associated with poor working conditions for workers and thus receives criticism in terms of the desirability of informal sector growth (Henley, et al., 2009; Yu, 2012). In Africa the informal sector has been particularly criticised for tax evasion depriving economies of public funds which could otherwise be used for development (Hobson, 2011).

Despite these criticisms, it has also been acknowledged that the informal sector plays an important role in economic development, providing livelihood opportunities for individuals when the formal labour market is unable to do so. This is particularly the case in developing countries where there are fewer formal employment activities and poor individuals face constraints in terms of minimal educational requirements, inflexible working hours and other regulatory requirements which make formal employment difficult (Bernabe, 2002). In Africa, gender discrimination in the formal sector has meant that the

informal sector provides an important opportunity for women to find employment and thus helps to redress gender employment inequalities (Hobson, 2011). More generally, the informal sector is able to provide livelihood opportunities where discrimination in the formal labour market restricts them.

In South Africa the informal sector is small by international comparisons (Kingdon & Knight, 2004; Yu, 2012). There are a number of factors which could restrict informal sector growth. In Africa the main issue tends to be a lack of access to finance preventing businesses getting going. The lack of formal regulations can also lead to business difficulties and participants in the informal sector being harassed by public officials. Other potential issues could include infrastructural constraints, such as inefficient transport services and a lack of acceptable market outlets, as well as the lack of information (Hobson, 2011).

In the QLFS, employment is defined as being in the informal sector if it meets one of two definitions:

- *"Employees who are not registered for income tax and who work in establishments that employ less than five persons*
- *Employers, own-account workers and persons helping unpaid in their household business who are not registered for either income tax or value-added tax."*
  (Stats SA, 2008, p. 16)

Figure 22 breaks down agricultural employment in the Western Cape into formal and informal employment as per the above classification. Over the period under review informal employment had the biggest share in overall employment in the third quarter of 2012 where it made up approximately 8%. Taking this into consideration, to make the graphs easier to read informal employment is measured on the right hand secondary y-axis, with formal employment measured on the left hand primary y-axis. Despite a large drop in informal employment at the end of 2011, informal employment showed an overall positive trend, with informal jobs increasing at, on average, approximately 102 jobs per year. In contrast, formal employment exhibited a downward trend, falling by more than 4.5 thousand jobs each year.

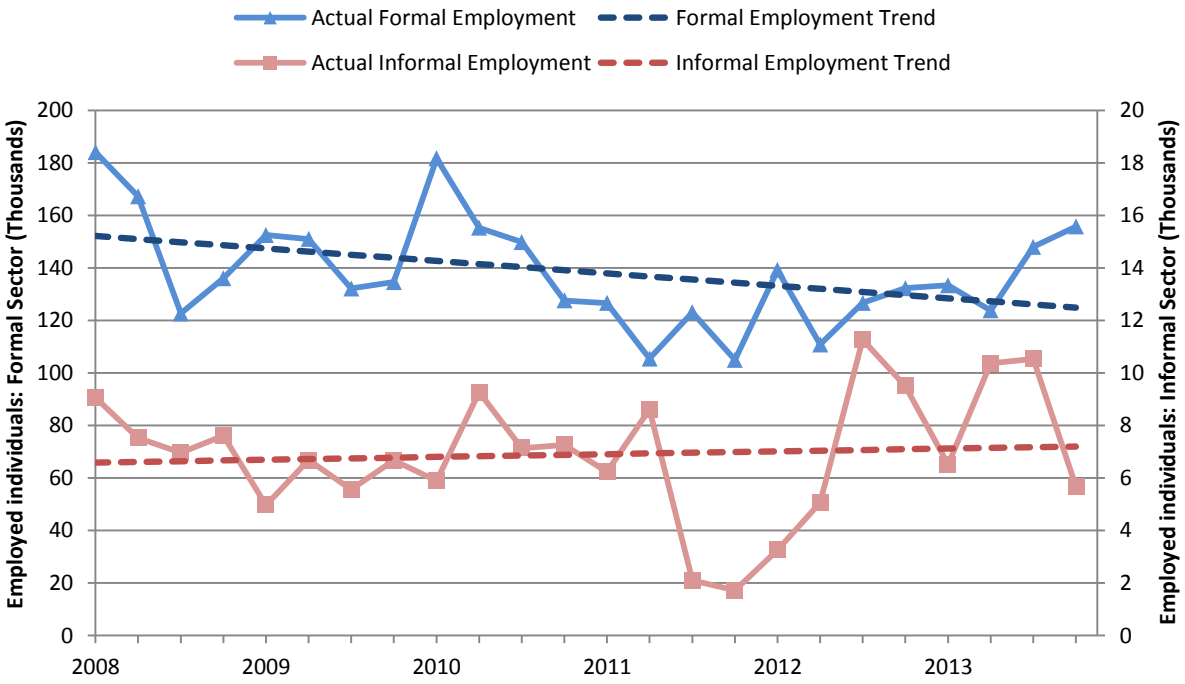

Figure 22: Formal and Informal Agricultural Employment in the Western Cape, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

The convergence of the two curves in Figure 22 is further illustrated in Figure 23 below which shows informal employment's share in total agricultural employment in the Western Cape. Overall as formal employment has been dropping sharply the informal economy has become more important for overall employment. This is evident from the upward sloping trend line in Figure 23, with the trend showing informal employment's share increasing by approximately 0.2 percentage points each year, or increasing by one percentage point every five years.

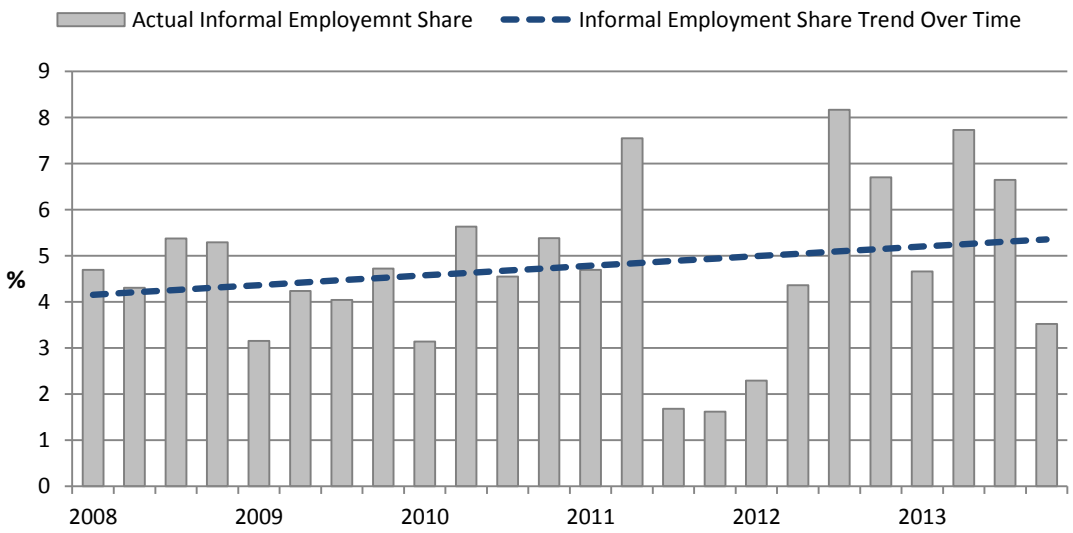

Figure 23: Informal Employment Share in Total Agricultural Employment in the Western Cape, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

The desirability of the informal sector is a contested topic. However, whilst the informal sector does present its issues, there are obvious benefits as discussed earlier. With unemployment as high as it is in South Africa, it is surprising that the informal sector has not expanded (Kingdon & Knight, 2004; Yu, 2012). However, this section has shown that agricultural employment in the informal sector has been growing in recent years. Whilst this growth is from a small base it is a positive finding, particularly at a time when employment in the formal sector has been declining. Whist the growth in employment in the informal sector is not enough to make up for much of the job losses in the formal sector it is a promising sign and one which should be encouraged further.

4.3. Terms of Employment

A recent study at the Western Cape Department of Agriculture found evidence of a decline in the proportion of the Province's agricultural workforce made up of contracted permanent employees and a rise in the proportion of employees who are casually employed (Jacobs, 2009). Whilst allowing for seasonal flexibility in agricultural employment as production levels fluctuates, casual employment is problematic due to the lack of stability in employment and the uncertainty that employees face surrounding their continued employment (Simbi & Aliber, 2000; Kritzinger, et al., 2004; Conradie, 2007). The

"casualization" of a labour force also leads to the prevalence of labour brokers in the labour market. Employment regulations in South Arica are only applicable to a two-tier employer–employee relationship and hence are not applicable when labour brokers are involved. Thus casual employment in South Africa has also come to be associated with the exploitation and mistreatment of workers (Van Der Burg, 2008; Jacobs, 2009).

Given the nature of employment terms and the variation in agricultural employment caused by seasonal production which has been illustrated in this paper, we would expect to find a stable permanent labour force existing together with a temporary and casual labour force which accounts for the variation.

Figure 24 shows the employment breakdown for three groups in relation to the nature of employment, based on the classifications used by Levy (1977) and Conradie (2007):

- **Permanent:** Permanent employees only, applies to individuals who have a permanent employment contract
- **Temporary/Casual:** Temporary or casual employment, referring to individuals with a contract of either limited or unspecified duration respectively
- **Actual Employee/Own Account:** Workers who do not work for an employer but are themselves an employer employing one or more employee or are an own-account worker.

The remainder of the employed agricultural labour force in the Western Cape work helping unpaid in household business, but this number was negligible and so these individuals were excluded from figures.

All forms of employment exhibited a downward trend, although the trend for employer or own account workers was relatively flat. The trends in employment trends relating to permanent employment and temporary/casual employment decline at a very similar rate, shedding 1.8 and 2.1 thousand jobs per annum respectively.

What is surprising about Figure 24 is the volatility in permanent employment. Rather than having this steady trend of permanent employment with temporary and casual employment adjusting to match short-term employment dynamics, there are clear signs of variation signifying short-term changes and swings even in permanent employment.

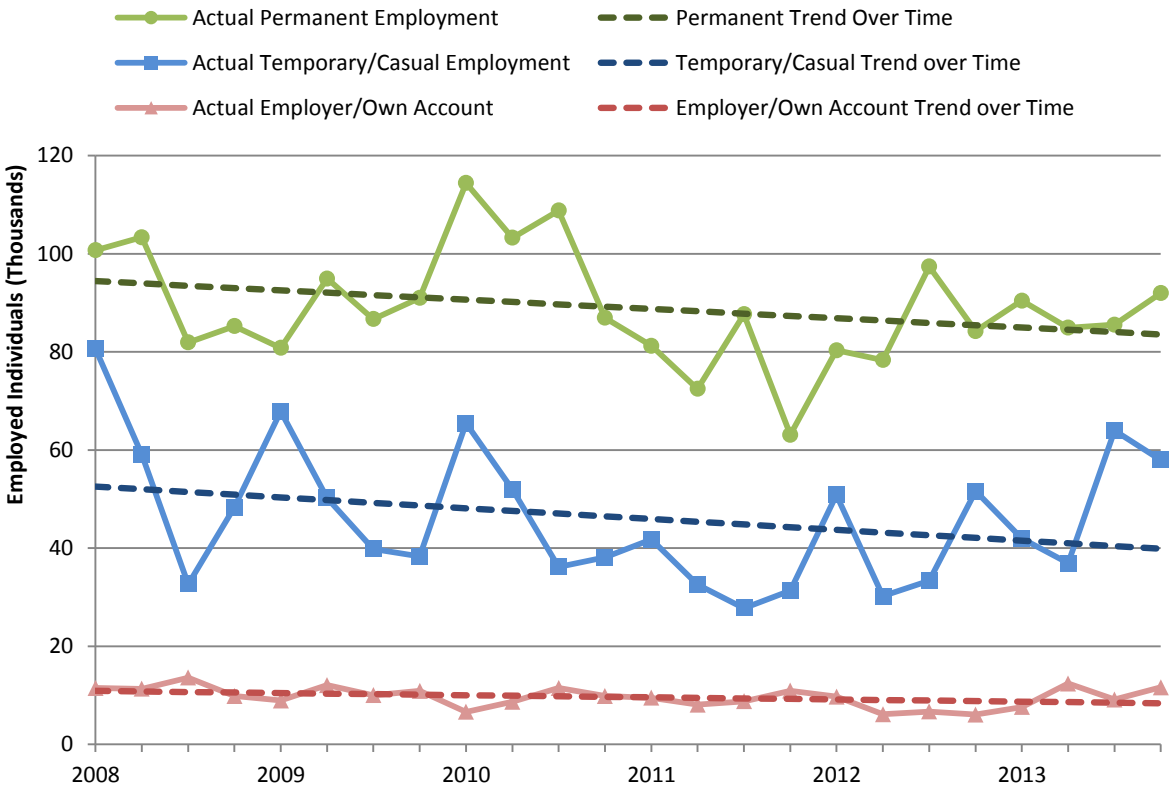

Figure 24: Western Cape Agricultural Employment by Nature of Employment, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

Figure 25 shows the coefficient of determination (r^2) for the three trend lines in Figure 24, which can be used to assess the level of variation around the trend line. As discussed when looking at Figure 17, lower r^2 values indicate more deviation from the trend line, thus showing a higher degree of variation around the long term trend and hence the more employment volatility. As can be seen, there is almost as much volatility in permanent employment and temporary/casual employment, whereas working as an employer or own account worker showed more stability in terms of aggregate numbers.

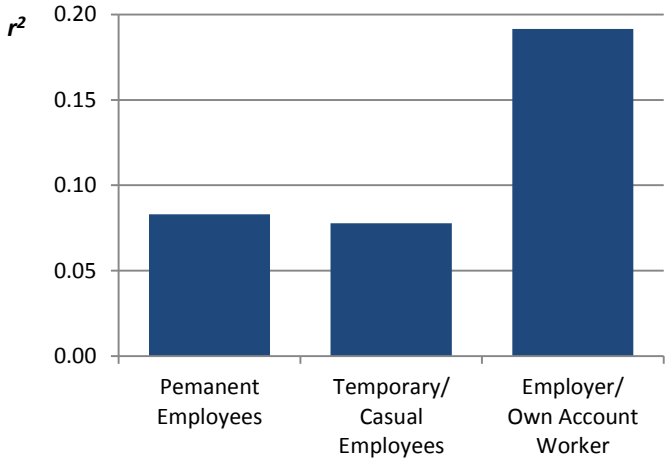

Figure 25: Coefficient of Determination for Employment Trend Regressions by Nature of Employment

Source: Compiled using own calculations and data from (Stats SA, 2014a)

Looking at the share of permanent employment in total agricultural employment in the Western Cape, despite declining absolute numbers, there was an upward trend in the relative share. This is illustrated in Figure 26 below which shows the actual share of employment in total agricultural employment in the Western Cape as well as the trend to come out of the regression of this share over time. The graph shows a slight upward trend, with the share increasing by approximately 0.6% each year.

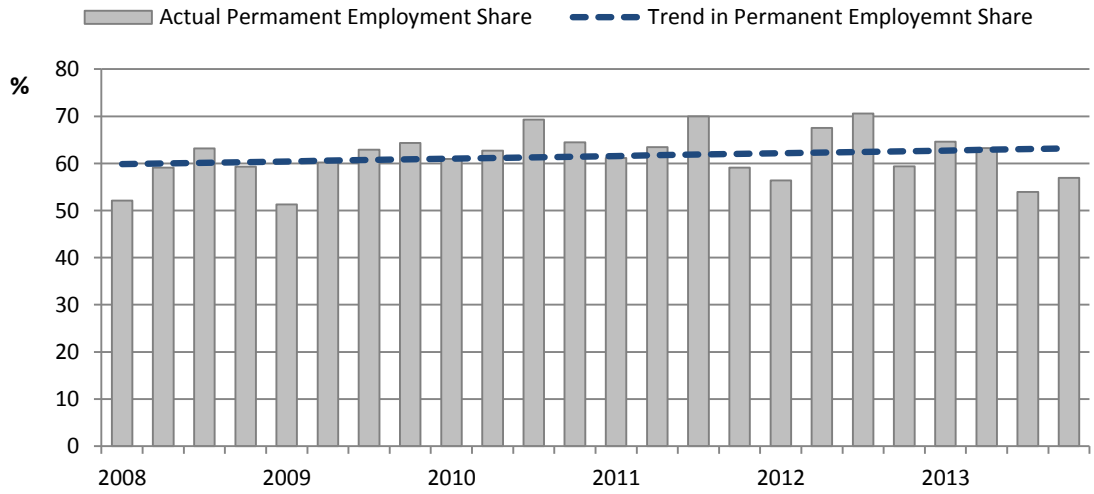

Figure 26: Permanent Employment Share in Total Agricultural Employemnt in the Western Cape, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

Thus far temporary and casual employees have been lumped together. However, there are important differences between these two groups, particularly in relation to the discussed issues around labour brokers which would mainly apply to casual workers. Figure 27 below breaks down temporary and casual employment, where:

- **Casual employment:** Individuals employed for an unspecified duration
- **Temporary employment:** Individuals employed for a specified limited duration

When separated, a very slight upward trend in temporary employment can be observed, coupled with a declining trend in casual employment. According to the trend lines, casual employment begins above temporary employment but during 2010 the two trend lines cross. The two curves displaying the actual employment data move almost in opposite for most of the time period, almost suggesting a trade-off between the two which may reflect changes to the labour market environment.

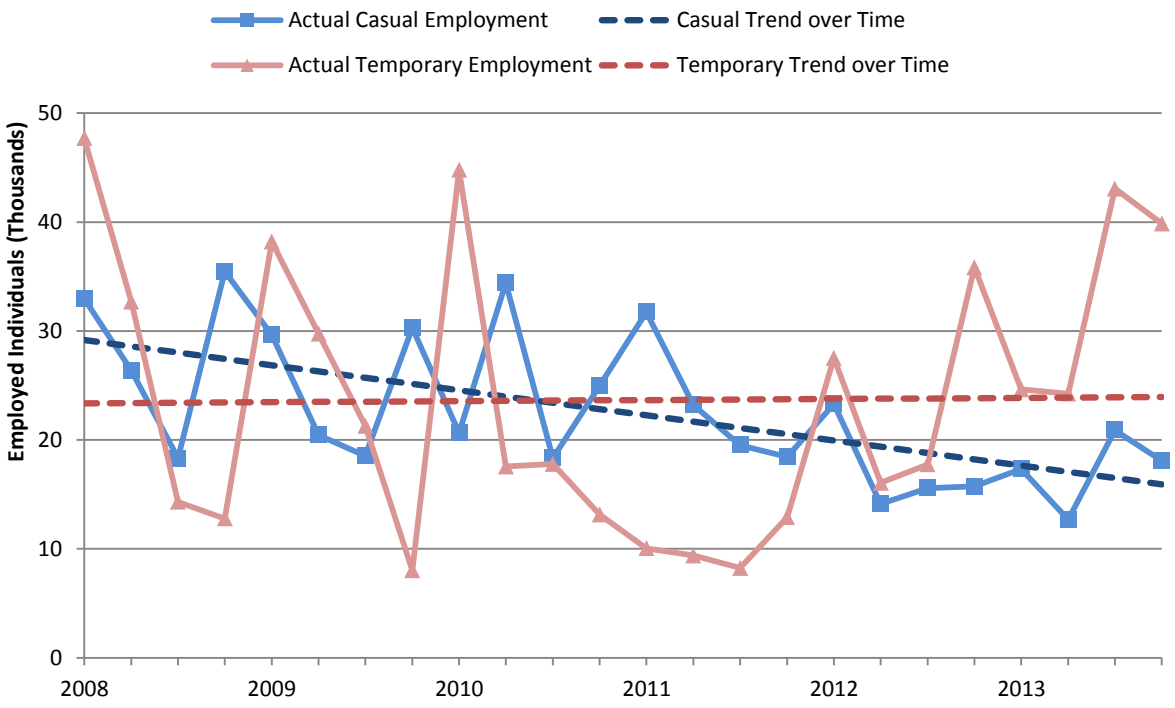

Figure 27: Temporary and Casual Agricultural Employment Trends in the Western Cape, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

Data on hours worked was not available for the first quarter of 2008. In order to be consistent with the need to not capture annual seasonality, when looking at hours worked data is only included from 2009. Whilst this will negatively affect the accuracy and reliability of the trends, it is still worth looking into for the five year period where data is available for all quarters.

Figure 28 shows the trends in full-time and part-time employment between the beginning of 2009 and the end of 2013. There are far more full-time employees, with the part-time employment reaching a maximum share in total employment of approximately 3% in the third quarter of 2013. For ease of reading part-time employment is measured separately on the right hand y-axis. The trend in part-time employment was relatively flat, increasing ever so slightly from approximately 2 344 individuals to 2 392 individuals. Full-time employment thus decreased at almost exactly the same rate as total employment.

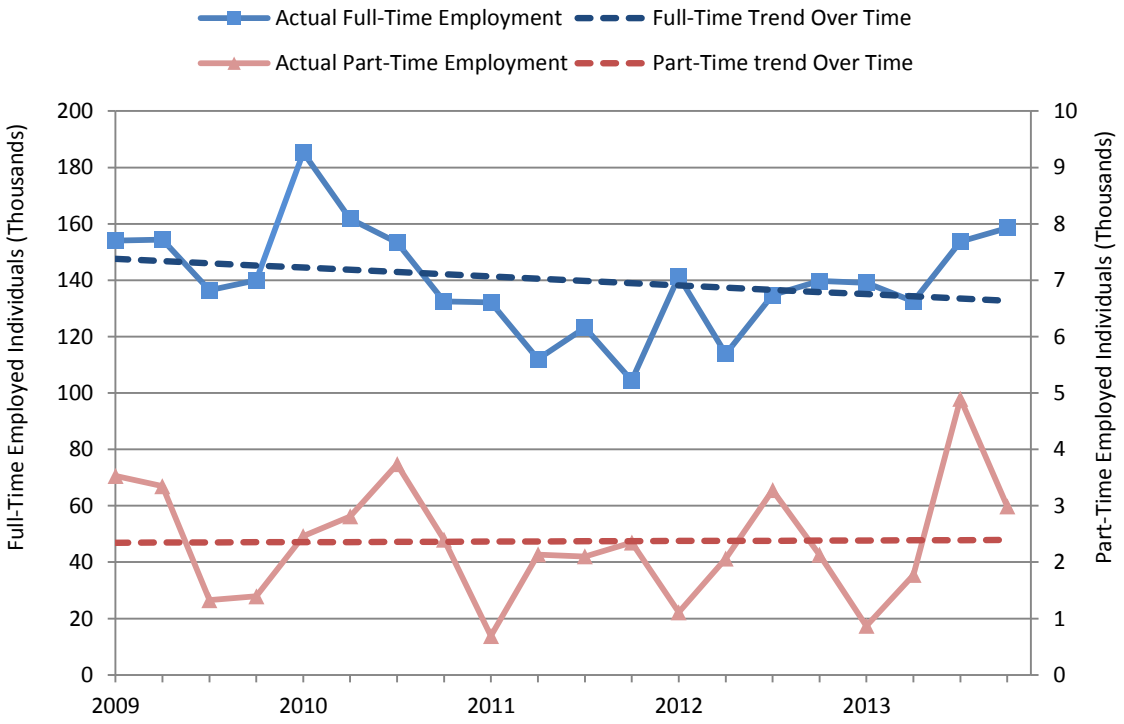

Figure 28: Full-Time and Part-Time Agricultural Employment Trends in the Western Cape, 2009-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

Splitting employment up in terms of how long individuals have been in their current job gives an indication of the nature of who is being laid off in the Western Cape Agricultural

Sector. If there is a sharp decline in those individuals who have had long-term jobs it suggests that experienced employees are losing their jobs and that there is no increased job security which comes with time in a particular job. If, on the other hand, there is a sharp decline in employed individuals who have been recently employed, it suggests that there is initial job insecurity but that individuals with experience are being retained in their employment. This will lead to more "learning-by-doing" and increase the economy's human capital stock

Figure 29 shows Western Cape Agricultural Employment between the beginning of 2008 and the end of 2013 broken down into those who have been in their current job less than a year, those who have been in their current job between one and five years and those who have been in their jobs more than five years. It also includes the trends in each group over time. The graph clearly shows the major decline came in recently employed individuals, those employed in their current job for less than a year. The number of employed individuals who had been in their job between one and five years showed only a slightly decreasing trend. The number of employed individuals who had been in their job longer than five years actually showed a slightly increasing trend, indicating that the Sector was at least doing well in retaining individuals who had been in their job for some time.

The trend highlighted in Figure 29 is further illustrated in Figure 30 which shows the breakdown of employment using more detailed groupings for the length of time individuals have been in their current occupation. The breakdown is based on the trend over time for each group, comparing the breakdown where each trend begins, the first quarter of 2008, with the breakdown where each trend ends, at the end of 2013. In the beginning of 2013, 36% of Western Cape Agricultural Employees had been in their job less than a year, by the end of 2013 this had declined to only 23%. The share of employees who had been in their job between three and five years increased by 3%, between five and ten years increased by 7% and between ten and twenty years increased by 5%. The other groups remained more or less similar.

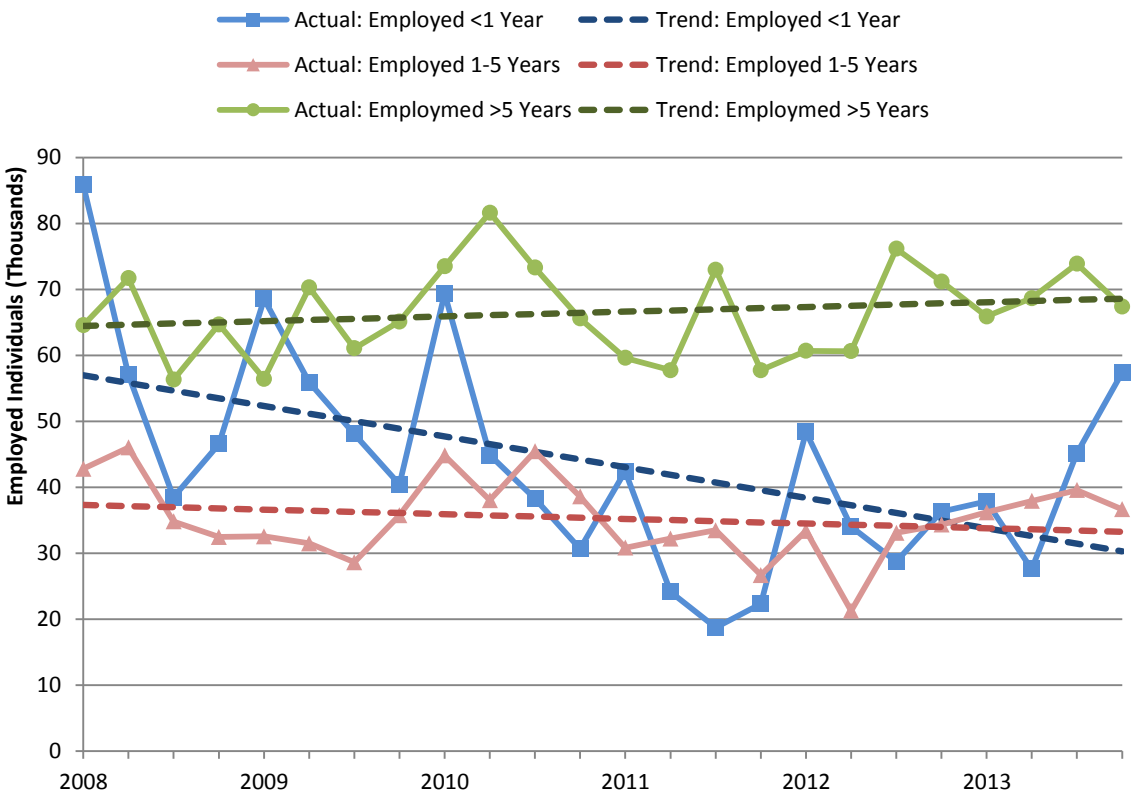

Figure 29: Western Cape Agricultural Employment by Length of Time in Current Job, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

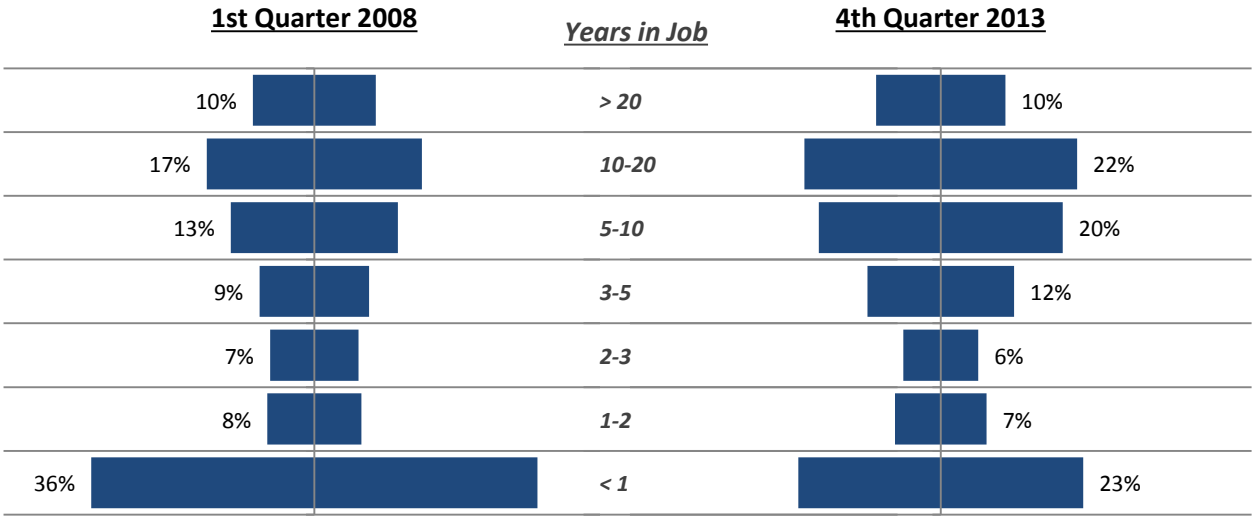

Figure 30: Changing Trend in Breakdown of Employment by Time in Current Occupation, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

This section has further illustrated the volatility of agricultural employment and shown that the volatility is not just the cyclical movement in temporary and casual jobs but that there is also a large amount of churning of permanent jobs. There is also evidence to suggest that the agricultural labour force in the Western Cape is not becoming more casual, despite concerns to the contrary, but rather the share of permanent employees has been gradually trending upwards over recent years. There is also evidence that the Sector has done well in terms of retaining experienced employees in their jobs. This has positive implications as it means that employees build up more knowledge about their specific jobs and that firms don't have to devote as much of their resources to the job-specific training of new employees.

4.4. Skills

Skills play an important role in the functioning of labour markets. In South Africa skills are a particularly pressing issue as the country's history has led to an excess demand for skilled labour which the labour market is unable to satisfy, yet on the other hand there is a large supply of unskilled and unemployed prospective workers who are unable to find suitable work (Bhorat & Hodge, 1999; Banerjee, et al., 2007; Dias & Posel, 2007). Rodrik (2006) argues that this is a result of poor performance in the industries which use unskilled labour the most intensively, mainly manufacturing but also agriculture and mining. These structural shifts in the labour market are important as they let policy makers know where they should be targeting interventions and also what human resources the economy has available.

Figure 4 shows Western Cape agricultural employment broken down into the following 3 education categories:

- **"Less Than Primary Education":** Individual either has no schooling or has only been educated to a level lower than primary school completion. This covers individuals who either have no schooling or some level of primary education lower than Grade Seven completion (the final year of primary schooling in South Africa).
- **"Primary Education Only":** Individual has completed primary schooling but does not have a completed secondary education. This covers both individuals who completed primary school and stopped their education and individuals who began a secondary education but have not completed it.

- **"Secondary Education Completed":** Individual has completed secondary schooling. This covers all individuals who have completed a matric or matric equivalent regardless of whether or not the individual went on to build on their qualifications thereafter

The most common educational attainment amongst the three groups was to have a primary education only, accounting for between 45% and 69% of total Western Cape agricultural employment depending on the quarter. When looking at employment in terms of individuals with primary education only, the trend was almost flat, showing that despite some short-term variation, employment remained relatively stable. There was a slight decrease for employees who had achieved a secondary education or higher. The sharpest decline came in the trend for employees who had not completed primary education.

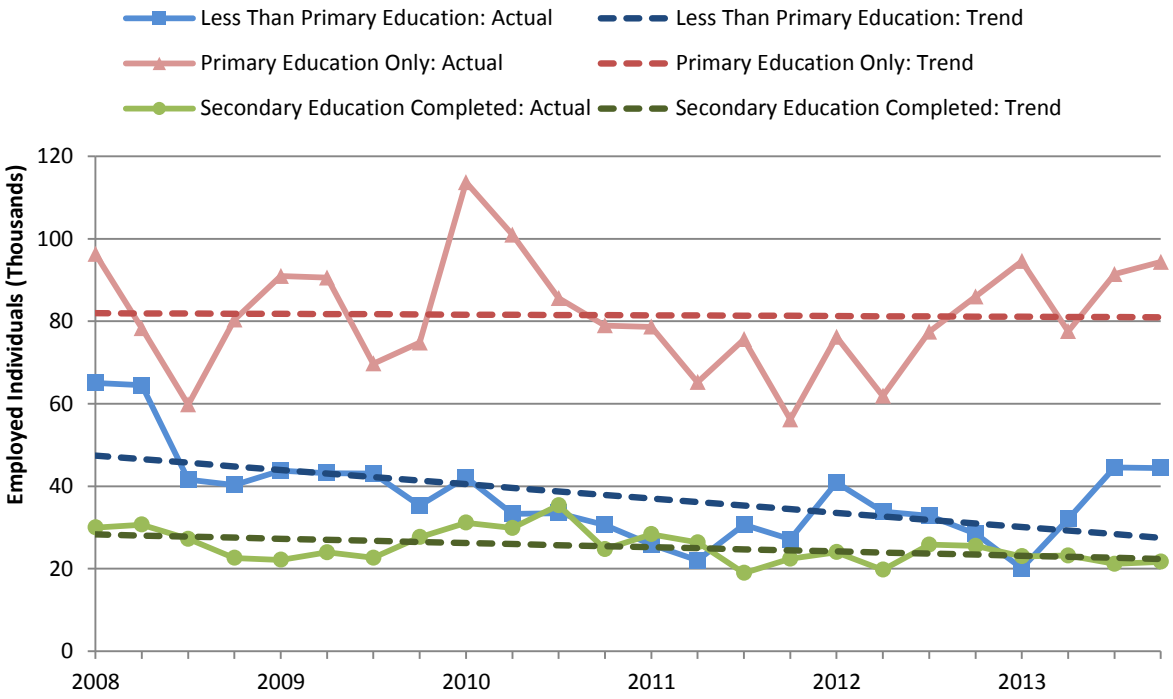

Figure 31: Education Levels of Individuals Employed in the Western Cape's Agricultural Sector, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

The education status of individuals can be broken down further as follows:

- **"Less Than Primary Education":** Broken down into **"No schooling"**, those who have not had any formal schooling, and **"Primary, not completed"**, those who have had

some level of primary education but below a primary school leaver (have not completed Grade 7)

- **"Primary Education Only":** Broken down into **"Primary completed, no secondary"**, individuals who have completed primary education but have not gone on any further to obtain any level of secondary education, and **"Secondary, not completed"**, those who have some level of secondary education but below the level of a secondary school leaver (have not completed matric or equivalent)
- **"Secondary Education Completed":** Broken down into **"Secondary completed, no tertiary"**, those who have completed a matric or equivalent qualification (high school leaver) but have not gone on to obtain any tertiary qualifications, and **"Tertiary"**, referring to individuals who have obtained a tertiary qualification

Figure 32 compares the breakdown of the trends in educational attainment, constructed based on the trends over time for each group as was done for the pyramid breakdowns in Figure 21 and Figure 30. The most noticeable differences are a large decrease in the proportion of employees who have not completed primary school, made up by a large increase in the proportion of employees who have passed primary, but not secondary school. There was also a decline in the proportion of employees with a tertiary education.

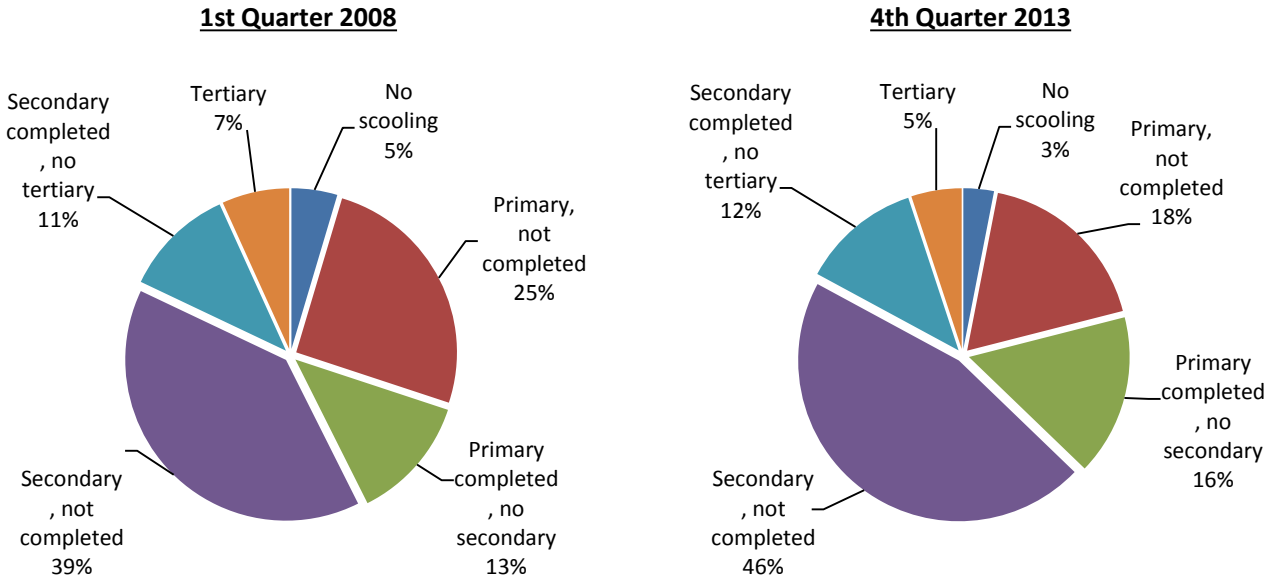

Figure 32: Changing Trend in the Breakdown of Educational Attainment for Western Cape Agricultural Employees

Source: Compiled using own calculations and data from (Stats SA, 2014a)

In the QLFS data occupations are further broken down according to South African Standard Occupation Classification (Stats SA, 2008). The different occupation classifications are: managers, professional, technicians, clerks, sales and services, skilled agriculture, craft and related trade, plant and machine operators, elementary and domestic workers. Elementary occupations made up between 74% and 86% of all Western Cape Agricultural employment depending on the quarter. The next biggest contributor to employment was from skilled agriculture which only made up between 5% and 11% of jobs over the period.

Figure 33 shows elementary and skilled agricultural employment in the Western Cape. Due to elementary occupations being so substantially greater over the entire period, skilled agricultural employment is measured on the right hand y-axis. Under both classifications there is a slight declining trend. The decline is particularly slight for skilled agricultural employment which is almost flat, declining at only 88 occupations a year. Due to a slightly steeper curve and being responsible for substantially more employment than skilled agriculture, elementary occupations declined at a rate of almost 4 thousand jobs a year.

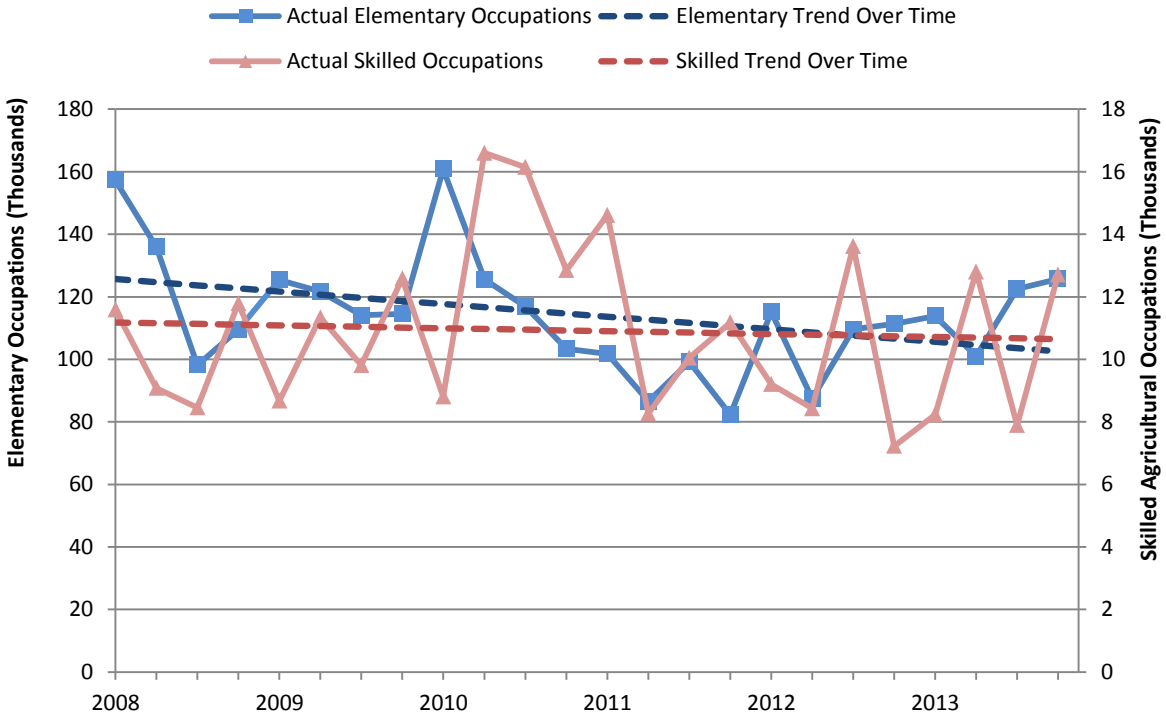

Figure 33 - Elementray and Skilled Western Cape Agricultural Employment, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

Whilst elementary occupations declined significantly over the period under review, the decline was almost in line with the decline in total Western Cape agricultural employment, meaning the employment share remained relatively stable. This is illustrated in Figure 34 below which shows the share of Western Cape agricultural employment which is elementary occupations and the trend in the share. The trend line only declines very slightly, suggesting the share in total employment has been falling by approximately 0.2% per annum.

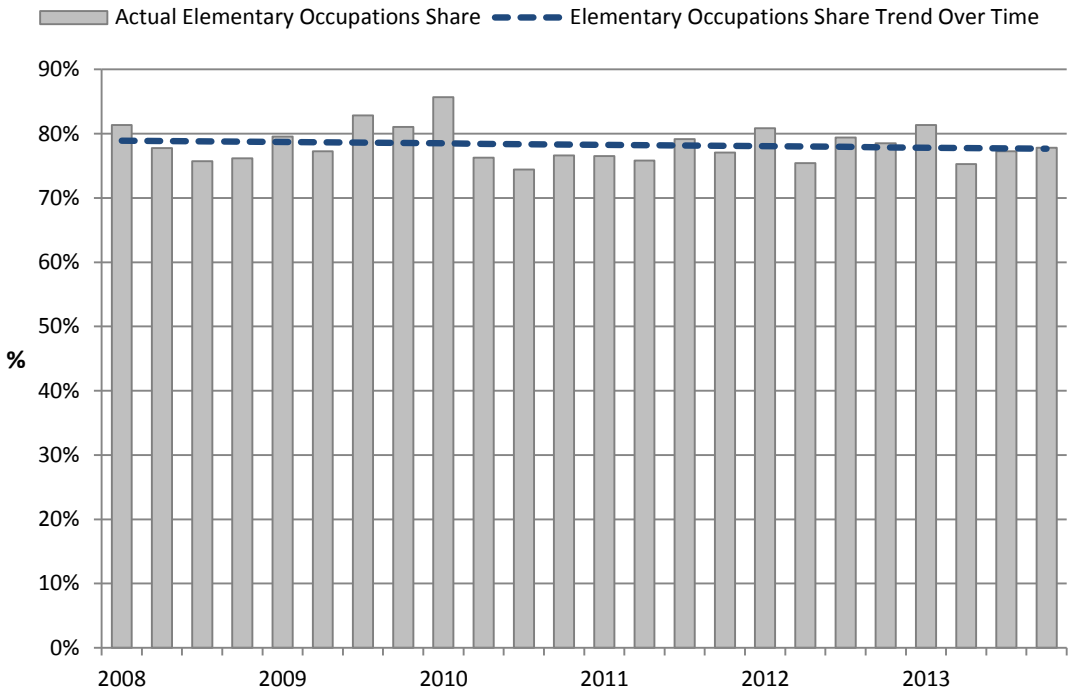

Figure 34: Elementary Occupation Share in Total Western Cape Agricultural Employment, 2008-2013

Source: Compiled using own calculations and data from (Stats SA, 2014a)

The skills composition of the Western Cape Agricultural Sector has been going through an interesting transition. There appears to be a movement away from the poles, a decline in those with very little and a lot of education and an increase in the proportion of the labour force with what could be termed a "medium" education, workers who have at least completed primary school but have not gone further than a secondary education. The majority of the Western Cape agricultural labour force works in elementary occupations. Whilst the number of these occupations has been falling this is proportionate to the fall in total agricultural employment in the province, meaning that the share of Western Cape

agricultural employment made up of elementary occupations has remained relatively constant.

5. CONCLUDING COMMENTS

This study has served two purposes. Firstly in the more theoretical sense it has highlighted issues with agricultural employment data and proposed a methodology for getting a more accurate depiction of employment trends in the midst of these issues. Specifically it has been shown that agricultural employment is subject to short term fluctuations which are not indicative of the longer term employment trends. The methodology proposed in this paper involves regressing quarterly employment data over time and then using the regression coefficients to plot the series' linear trend. This gives the direction in which employment is moving, accounting for the volatile nature of agricultural employment.

The second purpose of this study is to use the methodology proposed to analyse recent employment trends in the Agricultural Sector in South Africa's Western Cape Province. Despite the Province being South Africa's biggest source of gross farm income and being the main source of production of what have been cited as the most labour intensive agricultural products, agricultural employment in the Province has been on decline. Whilst the Western Cape maintains the highest provincial agricultural employment numbers in the country, its share has been falling as agricultural employment in the province has been declining at a faster rate than it has for the country as a whole.

When employment is broken down there are also signs of structural shifts in agricultural employment in the Western Cape and the general employment trend is not uniform across certain groups and classifications of individuals. Geographically the decline in agricultural employment was only a feature of urban agriculture, with rural agricultural employment remaining relatively stable over the period under review.

There was little change in the racial composition of Western Cape agricultural employment with coloured employment gaining slightly relative to white and African employment. Despite falling net employment for females, there was an increasing trend in female's share in total employment. There was also a proportional decline in young and

old workers, contributing to a rising share of the workforce being middle aged, particularly those aged between 30 and 34 years of age.

Whilst the informal sector only provides limited employment in the Western Cape Agricultural Sector, there was a rise in informal agricultural employment in the province between the beginning of 2008 and the end of 2013. The informal sector allows for livelihood opportunities where the formal labour market is unable to do so. Thus an increasing informal sector will mean more opportunities for individuals who would otherwise not have them. The finding of increasing informal employment also means that formal agricultural employment is falling even more that the trend in total agricultural employment.

Despite concerns about a "casualization" of the South African agricultural labour force, evidence from the Western Cape showed the opposite. Although the level of permanent employment fell over the period under review, the share of total employment which is permanent has been gradually trending upwards. Within casual and temporary employment there was an increase in the number of individuals with temporary employment contracts and a decline in casual employment numbers. Surprisingly permanent employment showed evidence of significant short-term volatility. Part-time employment is very small in the Western Cape Agricultural Sector and remained relatively stable over the period under review. Importantly there were signs of success in terms of retaining experienced workers in their jobs. There was an increasing trend in employment of individuals who have been in their jobs for a long term and a sharp decline in employees who are new to their job.

There was an increasing proportion of the labour force possessing a completed primary school education, made up through a decline in individuals with little or no education and a decline in those with a tertiary education. Most individuals employed in the Western Cape's Agricultural Sector have elementary occupations. Whilst this share has been declining slightly it still remains accountable for the vast majority of employment.

The findings of this paper are done at a very broad level and looking at factors in isolation to observe general trends. Further work is therefore needed to be able to come up with concrete policy conclusions. This should be done by looking at one specific area and looking in depth therein, identifying which factors are influencing employment for different

groups and the interactions between the different classifications presented in this paper. This paper poses more questions than answers but it provides a starting point to help guide further research in this area.

Some of the questions to come from this study include, but are in no way limited to:

- Why has urban agriculture performed so badly in employment terms in the Western Cape? And why has rural agriculture not suffered the same job losses?
- Is the increased representation of women in the agricultural labour market reflecting greater access from women in the Sector or is this being caused by other factors?
- Is the trend in female employment the same in rural and urban areas? And for different occupations and skill requirements?
- What kinds of jobs are being created in the informal agricultural sector? And are these jobs sustainable?
- Is the decasualisation of the labour force resulting in better working conditions for workers in the Sector?
- How much knowledge in the Agricultural Sector is being learnt through on the job training relative to education received at formal education establishments? What has been the impact of this in terms of human capital development?

These are just a few key examples to help get an idea for further studies. The list is not at all exhaustive; it could go on and on.

Whilst the overall picture in recent years has not been too positive with agricultural employment exhibiting a negative trend, there are positives to be taken. As discussed above, there are particular areas where agricultural employment performance has been good in the Western Cape. Consideration also needs to be taken of the economic environment which has been challenging for the period under review. In particular recent times have seen exports drying up to key destinations, particularly Europe which is the biggest destination for Western Cape agricultural products and which has become increasingly difficult to export to through a decline in demand resulting from the recent financial crisis and increased regulations around health, environmental and worker treatment standards and regulations (Reynolds, et al., 2013).

To make sure that the Western Cape, and South Africa more generally, follows a path that ensures the employment growth and also meets the country's other strategic targets,

more of this kind of research will be needed to ensure that policy makers and other role players are fully aware of how the labour market is progressing. This has given the very general picture at a very broad level; the challenge now is to take these findings further.

6. REFERENCES

Alderman, H. & Sahn, D., 1989. Understanding the Seasonality of Employment, Wages, and Income. In: D. Sahn, ed. *Seasonal Variability in Third World Agriculture: The Consequences for Food Security.* Baltimore and london: International Food Policy Research Institute. John Hopkins Press, pp. 81-106.

Badat, S., 2012. Redressing the Colonial/Apartheid Legacy: Social Equity, Redress, and Higher Education Admissions in Democratic South Africa. In: Z. Hasan & M. Nussbaum, eds. *Equalizing Access: Affirmative Action in Higher Education: India, US, and South Africa.* New Delhi: Oxford University Press, pp. 121-150.

Banerjee, A. et al., 2007. *Why Has Unemplyment Risen in the New South Africa,* Cambridge: NBER Working Paper Series 13167.

Banerjee, A. et al., 2008. Why Has Unemployment Risen in the New South Africa. *Economics of Transition,* 16(4), pp. 715-740.

Bernabe, S., 2002. *Informal Employemnt in Countries in Transition: A Conceptual Framework,* London: Centre for Analysis of Social Exclusion (CASE) paper 56 April 2002.

Bhorat, H., 2004. Labour Market Challenges in the Post-Apartheid South Africa. *South African Journal of Economics,* 72(5), pp. 940-977.

Bhorat, H. & Hodge, J., 1999. Decomposing Shifts in Labour Demand in South Africa. *South African journal of Economics,* 67(3), pp. 348-380.

CGE, 2010. *Poverty and Inequality: Facts, Trends and Hard Choices,* Johannesburg: The Centre for Development and Enterprise (CDE): Edited proceedings of CDE Round Table Number 15.

Conradie, B., 2007. What Do We Mean When We Say Casualisation of Farm Work is Rising?: Evidence From Fruit Farms in the Western Cape. *Agrekon,* 46(2), pp. 173-194.

DA, 2014. *DAFF: Minister must account for job losses.* [Online] Available at: http://www.da.org.za/2014/08/daff-minister-must-account-for-job-losses/# [Accessed 18 08 2014].

Dias, R. & Posel, D., 2007. *Unemployment, Education and Skills Constraints in Post-Apartheid South Africa,* s.l.: Development Policy Research Unit (DPRU) Working Paper 07/120.

Furnham, A., 1985. Youth Unemployment: A Review of the Literature. *Journal of Adolescence,* Volume 8, pp. 109-124.

Gill, T., 2012. *Towards a Better Understanding of Cycles in Agricultural Employment - A Spectral Analysis Approach,* s.l.: Department of Agriculture: Wetsern Cape, South Africa. Paper Submission for the 2012 Annual Conference of the Agricultural Economics Association of South Africa (AEASA).

Gujarati, D., 2003. *Basic Econometrics.* Fourth Edition ed. New York, USA: McGraw-Hill.

Hall, R., 1986. Market Structure and Macroeconomic Fluctuations. *Brookings Papers on Economic Activity,* 1986(2), pp. 285-338.

Henley, A., Arabsheibani, G. & Carneiro, F., 2009. On Defining and Measuring the Informal Sector: Evidence from Brazil. *World Development,* 37(5), pp. 992-1003.

Hobson, E., 2011. *The Importance of the Informal Economy for Local Economic Development (LED) in Africa,* Addis Ababa: Local Economic Development Network of Africa (LEDNA). Knowledge Brief Issue No 2 October 2011.

ILO, 2013. *Measuring Informality: A Statistical Manual on the Informal Sector and Informal Employment,* Geneva: International Labour Organisation (ILO).

Jacobs, E., 2009. *Farm Workers, Job Security and Labour Contractors,* s.l.: Western Cape Department of Agriculture.

Joemat-Pettersson, T., 2013. *Budget Vote Speech.* [Online] Available at: http://www.daff.gov.za/docs/media/DAFF%20BudgetVoteAddress_29May2013.pdf [Accessed 18 08 2014].

Kingdon, G. & Knight, J., 2004. Unemployment in South Africa: The Nature of the Beast. *World Development,* 32(3), pp. 391-408.

Kritzinger, A., Barrientos, S. & Rossouw, H., 2004. Global Production and Flexible Employment in South African Horticulture: Experiences of Contracrt Workers in Fruit Exports. *Sociologia Ruralis,* 44(1), pp. 17-39.

Lam, D., Leibbrandt, M. & Mlatsheni, C., 2009. Education and Youth Unemployment in South Africa. In: R. Kanbur & J. Svejnar, eds. *Labour Markets and Economic Development.* New York: Routledge, pp. 90-109.

Levy, B., 1977. Seasonal Migration in the Western Cape. In: F. Wilson, A. Kooy & D. Hendrie, eds. *Farm Labour in South Africa.* Cape Town: David Philip, pp. 87-102.

Mokomele, P., 2014. *Minister's Statement at the Agri-Sector Unity Forum (ASUF) Policy Conference.* [Online] Available at: http://www.nda.agric.za/docs/media/MINISTER%20STATEMENT%20AT%20THE%20AGRI-SECTOR%20UNITY%20FORUM%20(ASUF)%20POLICY%20CONFERENCE.pdf [Accessed 18 08 2014].

Mucina, L. & Rutherford, M., 2006. *The Vegetation of South Africa, Lesotho and Swaziland,* Pretoria: South African National Biodiversity Institute.

NPC, 2011. *National Development Plan: Vision for 2030,* South Africa: National Planning Commission.

O'Higgins, N., 1997. The Challenge of youth Unemployment. *International Social Security Review,* 50(4), pp. 63-93.

O'Higgins, N., 2001. *Youth Unemployment: a Global Perspective.* Geneva: International Labour Organisation (ILO).

Reynolds, S. et al., 2013. *Impact of Possible European Union Market's Closure to South African Citrus Fruit,* s.l.: Bureau for Food and Agricultural Policy (BFAP).

Rodrik, D., 2006. *Understanding South Africa's Economic Puzzles,* Cambridge: National Bureau of Economic Research (NBER) Working Paper No. 12565.

Roosevelt, F., 1938. April 14 1938: Combatting the 1937-1938 Recession. In: R. Buhite & D. Levy, eds. *FDR's Firside Chats.* s.l.:University of Oklahoma Press, pp. 111-123.

RSA Presidency, 2003. *Broad-Based Black Economic Empowerment Act No. 53, 2003,* Cape Town: Governemnt Gazette, Vol. 463, No. 25899.

Simbi, T. & Aliber, M., 2000. *Agricultural Employment Crisis in South Africa,* s.l.: Trade and Industrial Policy Strategy Working Paper 13_2000.

Stats SA, 2007. *Census of Commercial Agricultural, 2007: Financial and Production Statistics,* Pretoria: Statistics South Africa. Report No. 11-02-01 (2007).

Stats SA, 2008. *Guide to the Quarterly Labour Force Survey,* Pretoria: Statistics South Africa, Report Number 02-11-01.

Stats SA, 2012. *Census 2011,* Pretoria, South Africa: Statistics South Africa, Statistical Release (Revised) P0301.4.

Stats SA, 2014a. *Quarterly Labour Force Survey (Revised).* [Online] Available at: http://interactive.statssa.gov.za:8282/webview/ [Accessed 10 07 2014].

Stats SA, 2014b. *Quarterley Labour Force Survey: Quarter 4, 2013,* Pretoria, South Africa: Statistics South Africa, Statistical Release P0211.

Van Der Burg, A., 2008. *Going for Broke: A Case Study of Labour Brokerage on Fruit Famrs in Grabouw,* Stellenbosch, South Africa: Centre for Rural Legal Studies.

World Bank, 2014. *World Development Indicators.* [Online] Available at: http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators [Accessed 30 10 2014].

Yu, D., 2012. Defining and Measuring Informal Employment in South Africa. *Development Southern Africa,* 29(1), pp. 157-175.