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## **Background Paper Series**



**Background Paper 2009:1(7)**

# **A Profile of the Gauteng Province: Demographics, Poverty, Income, Inequality and Unemployment from 2000 till 2007**

*Elsenburg  
February 2009*

# PROVIDE

# PROJECT

The Provincial Decision-making Enabling Project

## **Overview**

The Provincial Decision-Making Enabling (PROVIDE) Project aims to facilitate policy design by supplying policymakers with provincial and national level quantitative policy information. The project entails the development of a series of databases (in the format of Social Accounting Matrices) for use in Computable General Equilibrium models.

The National and Provincial Departments of Agriculture are the stakeholders of the PROVIDE Project.

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# A Profile of the Gauteng Province: Demographics, Poverty, Income, Inequality and Unemployment from 2000 till 2007<sup>1</sup>

## Abstract

*The Gauteng agricultural sector is a dynamic and livelihood sustainable sector. Approximately 0.46% of the Gauteng value added gross domestic product comes through agriculture and 0.61% of the population in Gauteng is working in this sector. There is thus a need for macro-economic research in order to investigate potential and current challenges and opportunities.*

*This paper examines several of these challenges namely demographic compositions, unemployment, income distribution, poverty and inequality. It will provide results from the Labour Force Surveys from 2000 until 2007 with a more in-depth look into 2007. Population and labour force statistics provide the foundation for further analysis. This paper indicates that unemployment is being dominated by the African individuals and that employment in the Gauteng agricultural sector was on a decreasing trend, but is increasing again. It shows further that income distribution is highly skewed which leads to high levels of poverty and inequality. Agricultural incomes are lowest across all races compared to non-agricultural incomes except for the White farmers/farm workers who earn more than their counterparts in other sectors. Poverty is extremely high for African workers in the Gauteng agricultural sector but has decreased since 2000 to 2006, with an increase in 2007. One of the principal concerns is that of inequality. It shows no improvement, actually a widening in the inequality gap since 2000, with a high in-between race inequality and lower within race inequality in the Gauteng agricultural sector.*

*Throughout the report the Gauteng agricultural sector is compared to the non-agricultural sector, Gauteng overall and South Africa for a better understanding of the Gauteng agricultural sector's position. This report indicates that the Gauteng agricultural sector could benefit from intervention and support to correct the present state of decreasing employment, low income, and high poverty and inequality levels.*

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## 1. Introduction

Gauteng is home to about 9.3 million individuals and about 57 000 are working in the agricultural sector (Statistics South Africa, 2007a). Therefore 0.61% of the Gauteng population is working in the agricultural sector, but it contributed 0.46% through value added for the economy in 2006 (Statistics South Africa, 2007b). This shows that the agricultural sector is a small sector in Gauteng, but thorough analysis is needed to identify areas of need to better the sector.

This paper investigates the Gauteng agricultural sector by analysing the Labour Force Surveys conducted by Statistics South Africa. These surveys are conducted biannually, and since 2000 done in March and September. The focus of this paper is to analyse trends through years (2000 till 2007) and to take a deeper look at the 2007 data. Like all datasets, the Labour Force Surveys have some restrictions, and these are discussed in the next section together with the measurement issues confronted throughout the study.

Section 3 examines the population statistics of South Africa and Gauteng, together with the labour force profiles for South Africa, Gauteng and the Gauteng agricultural sector. Unemployment then will be discussed as well as employment statistics of the Gauteng agricultural sector. The premises of this section are demographic analyses. Section 4 analyses the income profiles of the agricultural sector. Poverty indices are next investigated, and the Foster-Greer-Thorbecke class of indices was used. Section 6 takes a closer look at inequality within the province by using the Gini, Theil and Lorenz curve analysis. Throughout the paper the results of the Gauteng agricultural households are compared with Gauteng and South Africa data. Lastly conclusions are drawn from the provided information.

## 2. Measurement and challenges of dataset

### 2.1. Labour Force Survey

The Labour Force Surveys are conducted by Statistics South Africa biannually (March and September). For this paper, two datasets were used. Both datasets were obtained from Mr. Derek Yu from the University of Stellenbosch. This was done to have consistency between the two datasets. The first dataset is the 2007 March Labour Force Survey and it was used for more in-depth analysis such as location of work activity or analysis on district level. The second dataset is a merged dataset of all the Labour Force Surveys from 2000 until 2007. This was used for over-time analysis. This dataset only includes the working population (15 – 65 years), but does have the information regarding the rest of the household for household level analysis. Adjustments were also made with the consumer price index (CPI) of wages for individuals as

well as households to have reliable comparisons across time. The CPI adjusted wages to the basis year of 2000.

## 2.2. Extent of data

Respondents had to answer six sections in the most recent survey. The first section asks demographic information, section two about activities the past seven days, section three unemployment and non-economic activities, section four the main work activities the past seven days, section five about job creation and public works programmes and the last section (six) about agricultural activities. The surveys did change with time, but no major change occurs, and the demographic and employment sections remained relatively unchanged. In the Labour Force Survey of March 2007 there are 109 551 observations, whilst the Labour Force Survey from 2000 until 2007 contains between 23 000 and 70 000 observations depending on the period (period refers to when the survey was done, i.e. March 2000 or September 2005).

Weights were calculated by Statistics South Africa, and were used throughout the analysis to scale data from sample to population level<sup>2</sup>. It needs to be mentioned that the Indian population is the minority in South Africa and thus data for this sub-group might be problematic due to low observation numbers. Measurement errors do occur, and thus the reader must be careful when quoting figures for the Indian population.

In a number of cases, respondents did not provide any answers to certain questions. One of these problematic questions are that of income where respondents are averse to give their personal income information. If no answer was given for income, it was classified as a dot income (“.”). The statistical programme used for economic analysis (STATA) does not consider dot incomes as entries, and thus will disregard it when calculating mean or median income. But calculating household incomes, dot incomes are read as zero, thus a household with 2 individuals, one earning R100 and the other one did not respond, will have a household earning of R100. This means all household and per capita calculations are distorted and biased towards zero income. Poverty and inequality calculations are affected the most, due to calculation surrounding the rates (see respective sections for calculations of different rates). Poverty and inequality rates for certain subgroups might be exaggerated due to non response. This is especially troublesome when non response occur just within a specific subgroup. If the non response is according to the population composition the rates will be inflated accordingly, but if it is a skew distribution, all rates are inflated but one group more than the other.

These inflated rates are difficult to pinpoint, because non response is unpredictable. Non response can be any value, and there are different ways of dealing with this. One response is to regard all non response as zero, another is to use hot deck imputation methods. Schoier (2008)

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<sup>2</sup> See Metadata in Labour Force Survey reports. Available online at [www.statssa.org.za](http://www.statssa.org.za)



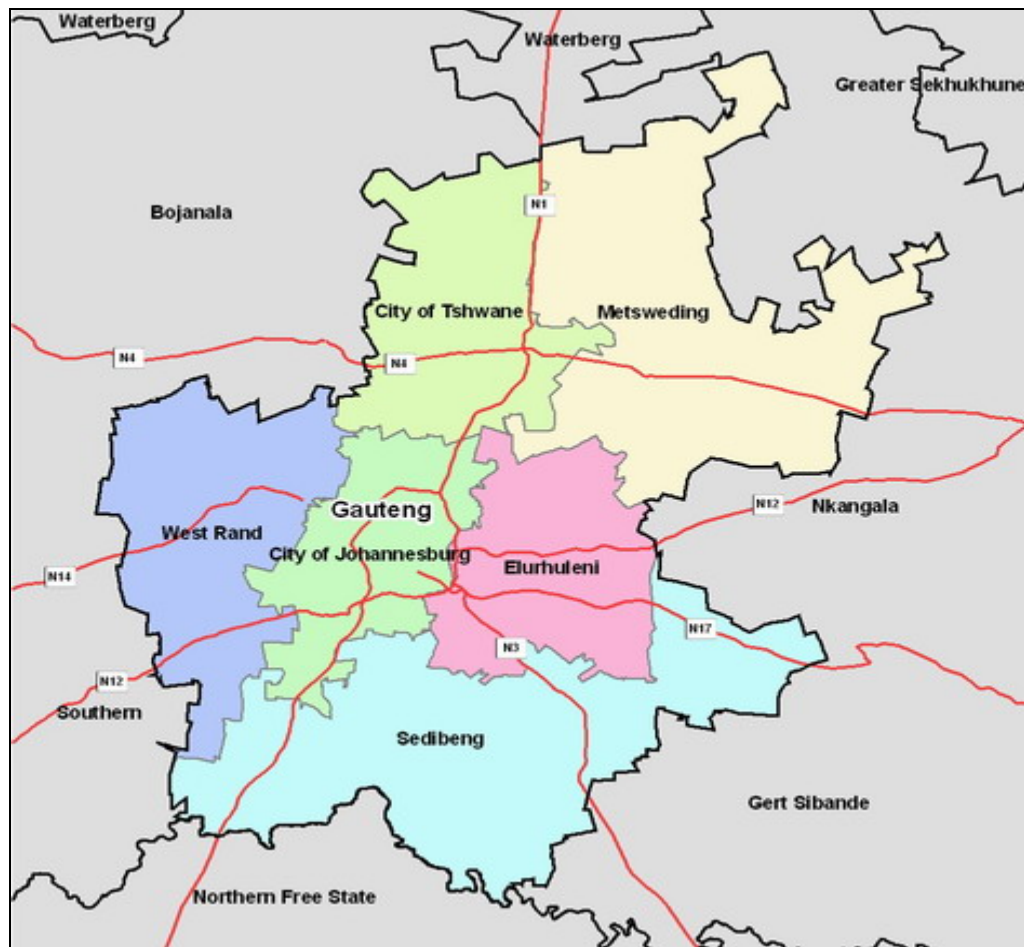
states that this method uses respondents that fully completed the questionnaire to match with respondents that have missing values, and then impute their values into the non response values. This preserves the distribution of item values and there are different methods to obtain the 'donor value'. One way is to filter through certain variables (example race, sex etc.) for both donor and receiver, and when these variables match the rest of the donor information will be imputed into the receiver's missing values.

For South Africa in 2007, 62.68% of respondents did not provide information regarding income. If a sub sample of all respondents that are living in a household under the poverty line is taken, 83% did not provide income information. This becomes problematic especially in cases where the sample size is very small as the case with the White and Indian population. If only 17% (100% - 83%) of income information for those living under the poverty line is available, a small sample size will have negative impacts on poverty. For example, in Gauteng there are 185 entries for White individuals living under the poverty line. On an average only 17% of that information is available, leaving only 31 entries. In reality, there are only 3 entries left which is too small to make any significant derivation. In Gauteng 2 185 entries were made in the African population group living under the poverty line, but 87% did not respond, leaving 284 entries. Although 284 entries is still a small sample size, a better analysis can be done. This trend of small White and Indian samples continues throughout all provinces, where the African and Coloured populations have a bigger sample size to do better analysis with.

For the purpose of this paper, non-response was disregarded in income profiles, but treated as a zero in household income calculations. In the poverty profiles, per adult equivalent household income is used and thus missing values are also treated as zero.

This paper focuses on the Gauteng agricultural households, but does compare certain statistics with the non-agricultural households in Gauteng and South Africa. South Africa is a diverse country and therefore social parameters i.e. income, poverty and unemployment are often compared across population groups. Population groups are classified according to the classification system used by Statistics South Africa in the Labour Force Surveys. Demographic analysis was also done according to gender, industry, occupation or skills level.

District level analysis was also done as mentioned earlier, and for clarity the following figure presents Gauteng and its districts. There are six districts within the Province namely the Metsweding district, West Rand, Sedibeng, East Rand, Johannesburg and Pretoria. Figure 1 reflects this:

**Figure 1: Gauteng districts map**

Source: Demarcation Board ([www.demarcation.org.za](http://www.demarcation.org.za))

## 2.3. Challenges

### 2.3.1. *Definitions of agricultural households*

Agricultural households are defined as households whose main income (more than 50%) is derived from employment in the agricultural industry, or income from an occupation classified as a skilled agricultural worker, regardless the industry. In addition a household is also defined as an agricultural household if the household is involved in agricultural activities that entail the production of food crops and/or keeping of animals and that these activities provide the household with its main food source or income source. Households that rely on agricultural activities for food supply or (non-salary) income are classified as subsistence farmers for purposes of this report. Information about subsistence farming was derived from the questions in section six of the Labour Force Survey where respondents were asked to indicate the aim of their involvement in agricultural activities as one of the following: a) as main source of food for the household, b) as main source of income/earning a living, c) as extra source of income, d) as extra source of food for the household, or e) as a leisure activity of hobby. Since there is no

indication of the value of production by these households, households were classified as agricultural households if they selected either a) or b) in the questionnaire. Both datasets, i.e. the dataset for 2007 and the dataset for 2000 till 2007, contain information on employment in the agricultural industry, or income from an occupation classified as a skilled agricultural worker, regardless the industry. However information on subsistence farming as defined above, was only available in the dataset for 2007; hence workers involved in subsistence farming, but not employment in agriculture, are not included in the numbers presented in this report when looking at trends over the 2000 till 2007 period.

Non response with regard to income for individuals employed in the agricultural sector was treated as stated in section 2.1, and thus not regarded in the definition of agricultural households. Only the labour force was considered (thus individuals between 15 and 65) for analysis to gain information about employees, but all members of a household were included in household analysis.

### 2.3.2. *Income bands*

Respondents were asked their respective incomes, and two different answers were accepted. Respondents could either state the specific value, or report it in income bands. These specific values and income bands were in Rand terms and either weekly, monthly or annual. It must be kept in mind that the earnings reported are from the main source of income (thus labour income), therefore social grants, remittances and in-kind transfers are not taken into account. In order to attain a value for the income bands, the interval regression method was used. This method consists of a generalised Tobit model where-after pseudo-maximum likelihood measures are estimated. The assumption is made that earnings follow a lognormal distribution. Interval-coded information is incorporated into the likelihood function to obtain the specific values for each income band. For more information, see Daniels and Rospabé (2005) and Von Fintel (2006).

## 3. **Demographics**

### 3.1. Population statistics

In order to do social analysis, racial compositions are needed on national, provincial and district level for the population. The population will also be looked at in terms of households as defined in section 2.2.1. Table 1 offers the number of people residing in South Africa and Gauteng by race, together with their shares of the population in 2007.

**Table 1: Racial composition of South Africa and Gauteng in 2007**

Population Group	South Africa	Share	Gauteng	Share
	Number	%	Number	%
<b>African</b>	37,887,594	79.42	7,327,616	78.57
<b>Coloured</b>	4,223,511	8.85	250,469	2.69
<b>Indian</b>	1,168,672	2.45	249,769	2.68
<b>White</b>	4,348,366	9.11	1,478,829	15.86
<b>Other</b>	8,764	0.17	19,570	0.21
<b>Total</b>	47,706,907	100	9,326,252	100.00

Source: Own calculation from Labour Force Survey 2007

It is shown that the African population group is the majority group in South Africa (79.42%) and in Gauteng (78.57%). The total population of South Africa is 47.7 million, while Gauteng has 9.3 million residents.

Investigating the racial composition of the six districts, the following information is obtained for 2007. Table 2 indicates that not only does Johannesburg have the highest share of people in Gauteng, but also the largest share of all population groups resides in Johannesburg except for Indians. The Metsweding district is home to only 1.07% of residents of Gauteng.

**Table 2: Racial composition of the Gauteng districts in 2007**

District	Population Group					
	African	Coloured	Indian	White	Total	Share (%)
<b>Metsweding</b>	69,135	8,906	915	20,370	99,326	1.07
<b>Share %</b>	0.94	3.56	0.37	1.38		
<b>West Rand</b>	502,034	4,413	22,216	88,345	617,009	6.62
<b>Share %</b>	6.85	1.76	8.89	5.97		
<b>Sedibeng</b>	740,604	14,165	2,154	92,895	849,817	9.11
<b>Share %</b>	10.11	5.66	0.86	6.28		
<b>East Rand</b>	2,285,637	28,023	110,481	354,980	2,786,152	29.87
<b>Share %</b>	31.19	11.19	44.23	24.00		
<b>Johannesburg</b>	2,682,147	151,971	85,182	488,152	3,407,452	36.54
<b>Share %</b>	36.60	60.67	34.10	33.01		
<b>Pretoria</b>	1,048,059	42,990	28,820	434,088	1,566,496	16.80
<b>Share %</b>	14.30	17.16	11.54	29.35		
<b>Total</b>	7,327,616	250,469	249,769	1,478,829	9,326,252	100.00

Source: Own calculation from Labour Force Survey 2007

The racial composition of the agricultural and non-agricultural households (as defined in section 2.2.1) in Gauteng in 2007 is given in Table 3. A household is defined in a specific population group according to the household head's race. The household head is classified as person number one that completes the questionnaire, thus it is not necessarily the household head that complete the questionnaire under the title 'person number one', but the assumption is made that the household head is more likely to complete the questionnaire first. Unfortunately mixed households are not acknowledged, and will be classified according to the household head's race.

**Table 3: Racial composition of agricultural households and non-agricultural households in Gauteng 2007**

<b>Population Group</b>	<b>Agricultural</b>		<b>Non-Agricultural</b>		<b>Total</b>	
	<b>Number</b>	<b>Share (%)</b>	<b>Number</b>	<b>Share (%)</b>	<b>Number</b>	<b>Share (%)</b>
<b>African</b>	48,851	84.0	2,406,262	78.42	2,455,113	78.53
<b>Coloured</b>			77,671	2.53	77,671	2.48
<b>White</b>	9,329	16.0	68,499	2.23	77,827	2.49
<b>Indian</b>		0	504,573	16.45	504,573	16.14
<b>Total</b>	58,179*	100.0	3,068,234	100	3,126,413	100.00

Source: Own calculation from Labour Force Survey 2007

\*See Table 5 for detailed breakdown

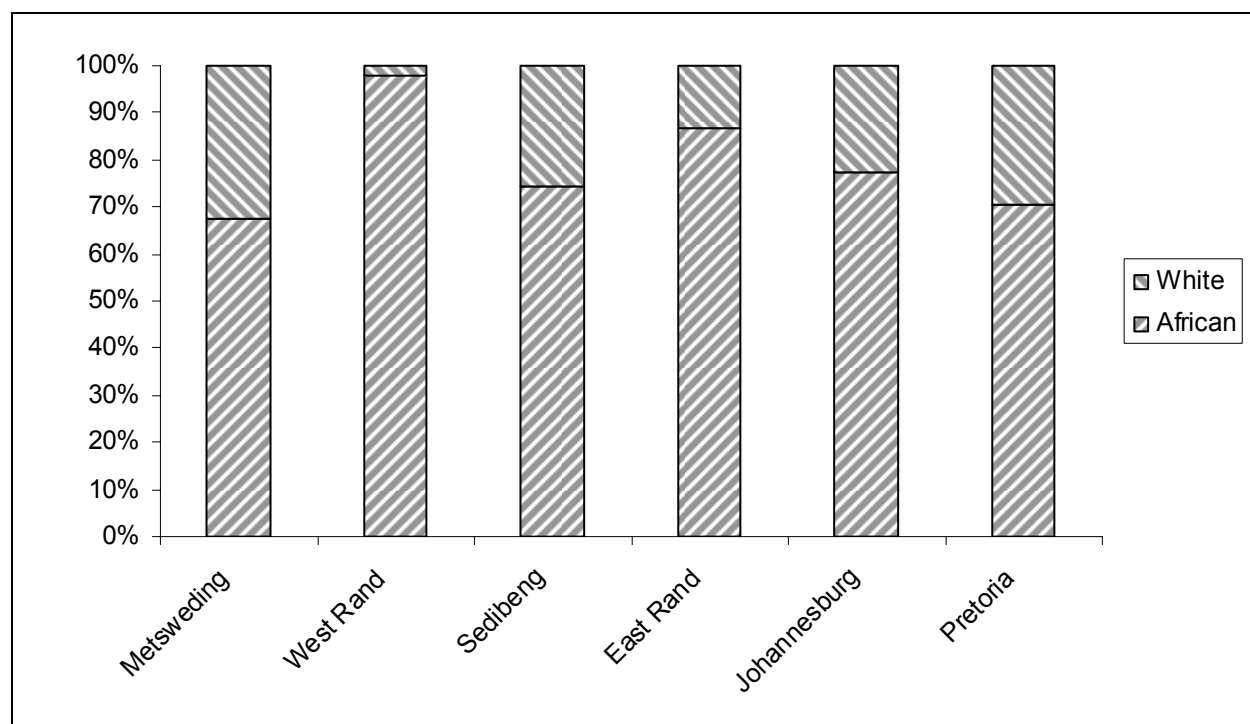
The agriculture sector is dominated by African households, similar to the trend in the non-agriculture sector. Taking a closer look at the agricultural district composition, the following table is obtained:

**Table 4: Racial composition of agricultural households in the Gauteng districts**

District	Population Group			
	African	White	Total	Share (%)
<b>Metsweding</b>	2,432	1,179	3,611	6.21
<b>Share %</b>	4.98	12.64		
<b>West Rand</b>	13,381	321	13,701	23.55
<b>Share %</b>	27.39	3.44		
<b>Sedibeng</b>	3,044	1,050	4,094	7.04
<b>Share %</b>	6.23	11.25		
<b>East Rand</b>	19,305	2,923	22,228	38.21
<b>Share %</b>	39.52	31.34		
<b>Johannesburg</b>	4,977	1,444	6,421	11.04
<b>Share %</b>	10.19	15.48		
<b>Pretoria</b>	5,712	2,412	8,124	13.96
<b>Share %</b>	11.69	25.86		
<b>Total</b>	48,851	9,329	58,179	100.00

Source: Own calculation from Labour Force Survey 2007

Table 4 indicates that there is around 58 000 households with agricultural workers earning more than 50% of household income, with the East Rand district having the biggest share and Johannesburg the smallest share. Compiling a stacked column chart for comparing race compositions, the results are as follows:

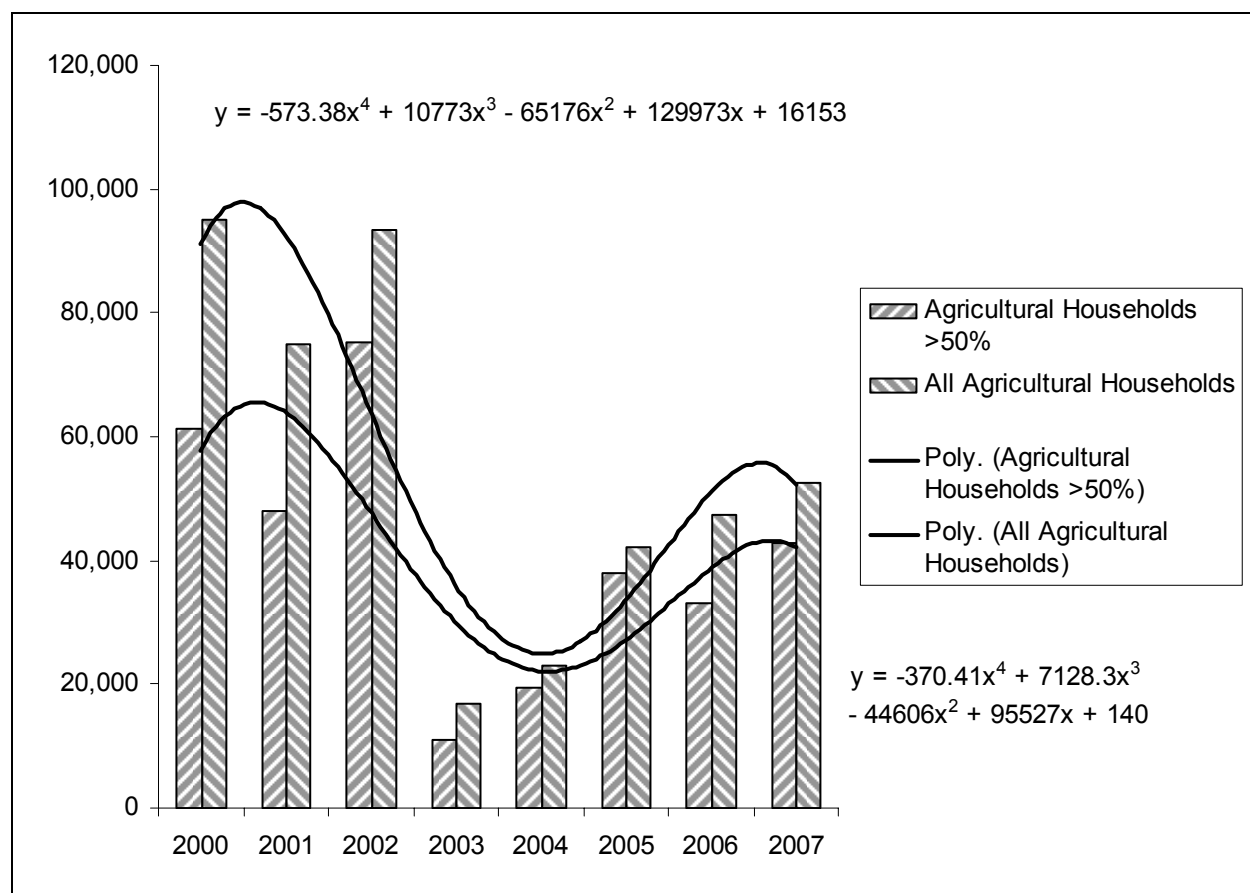
**Figure 2: Agricultural households in the Gauteng districts**

Source: Own calculation from Labour Force Survey 2007

Figure 2 clearly indicates that the African households are prominent across all districts with the White households in all the districts but are in the minority. The largest share of White households is found in Metsweding (32.65%) and the smallest share in the West Rand (2.3%).

Looking at the change in agricultural households since 2000, Figure 3 indicates the change in both a) all households with a member/ members working in agriculture, and b) households whose agricultural income is more than 50% of household income. Both series are fluctuating but is decreasing over time, with all households ending at 52 424 households and the more than 50% income households ending at 42 942<sup>3</sup> households. It must be kept in mind that due to the dataset used for obtaining flow charts (thus over time), section 6 of the LFS questionnaire (access to agricultural land and main reason for it) was excluded. Households that therefore have access to agricultural land and this land is the main source of non-salary income and/or food, are not counted in Figure 3.

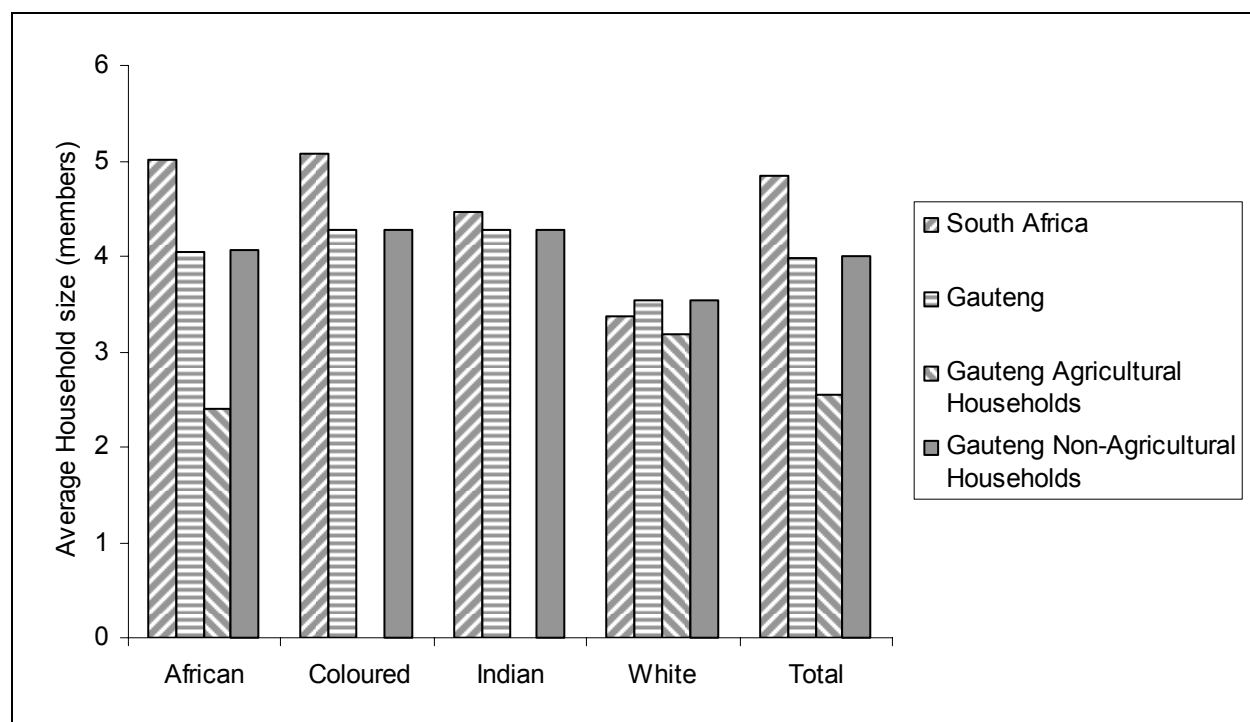
<sup>3</sup> Comparing this to Table 5, it corresponds to the total of the first two columns.

**Figure 3: Agricultural households over time**

Source: Own calculation from Labour Force Survey 2000-2007

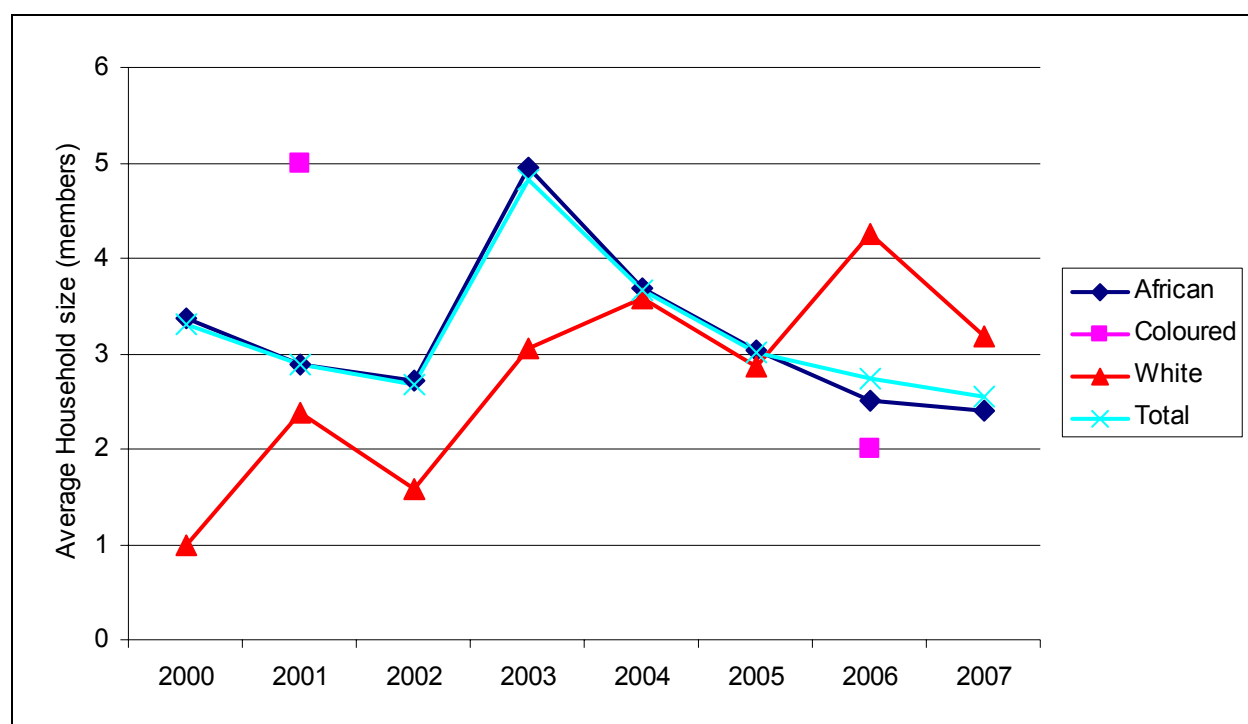
The average household size by race is given in the next figure (Figure 4). Gauteng's households are generally smaller than South Africa's except for the White population. The household size of non-agricultural households in Gauteng across all races is equivalent to the average household size in Gauteng. With regards to the agricultural households, household size is considerably smaller (2.5) than that of the average in South Africa and Gauteng (4.83 and 3.98).



**Figure 4: Household size by race for 2007**

Source: Own calculation from Labour Force Survey 2000

Taking a look at how the household sizes increased or decreased through time for the agricultural households, the following figure (Figure 5 ) was obtained. Figure 5 indicates that in 2007 the White population's households were the largest while the African population have the least number of people within the household. The African population's size is on a decreasing trend, with some sharp incline in 2003. This might be due to measurement error, as it is not in accordance with the rest of the trend. The White populations' household size increased significantly from 1 person per household in 2000 to 3.17 people per household in 2007.

**Figure 5: Household size from 2000 till 2007 for the agricultural households**

Source: Own calculation from Labour Force Survey 2000-2007

Economic activities within the agricultural households are investigated next to identify whether the households obtain their income and/or food from employment or subsistence farming. Table 5 indicates the number and share of agricultural households in Gauteng that obtain more than 50% of their income from agricultural activities, or whose main food source is from agricultural activities. These households have indicated their main source of income from agriculture, i.e. a) from employment in the agricultural sector or by agricultural occupation (column 1), b) from subsistence farming only (as defined in section 2.2.1) (column 4), or c) from a combination of a) and b) (columns 2 and 3). The African households have the largest share (82.38%) of employment in the agricultural sector, and this is consistent with the employment numbers stated earlier. There are only 15 206 households in Gauteng that depend solely on subsistence farming for main source of food (12 062 households) or income (3 114 households) and 88.4% are African households. 70.06% of agricultural households derive more than 50% of their household income from employment within the agricultural sector, while households involved with subsistence farming comprise 26.14%. For all of the 2 211 households that depend on subsistence agriculture but also receive salary income from employment in agriculture, this salary income is more than 50% of the household income.

**Table 5: Economic activity for agricultural households by population group in 2007**

	Only Employment and Occupation and >50% income		Subsistence farming and >50% income		Subsistence farming and <50% income		Subsistence farming only		Total	
Population group	Number	Share	Number	Share	Number	Share	Number	Share	Number	Share
African	33,579	82.38	1,829	82.76			13,442	88.4	48,851	83.97
White	7,183	17.62	381	17.24			1,765	11.6	9,329	16.03
<b>Total</b>	40,762	100	2,211	100			15,206	100	58,179	100
<b>Activity Share</b>	70.06		3.80				26.14		100	

Source: Own calculation from Labour Force Survey 2007

### 3.2. South African and Gauteng labour force

Every citizen in a country can be classified as either economically active or economically inactive. If an individual is economically active, (s)he must be between the ages 15 and 65, and able and willing to work. (S)He is part of the labour force, whether employed or unemployed. The not economically active population is either not able or willing to work, or does not fall in the required age range. The labour force is divided between the employed and unemployed. In order to be classified as unemployed, there are two definitions, a broad (expanded) and narrow (official) definition. The broad definition states an individual is unemployed if (s)he: (a) did not work the past 7 days; (b) wants to work and is available to start within 2 weeks. The narrow (official) definition is the broad definition including (c) is actively searching for work the past 4 weeks (Statistics South Africa). The labour force can thus vary according to which definition of unemployment is used. Table 6 represents the number and share of people in 2007, according to the strict and broad definition in the labour force, for South Africa and Gauteng respectively:

**Table 6: South African and Gauteng labour force in 2007**

South Africa					Gauteng			
	Broad		Strict		Broad		Strict	
	Number	Share (%)	Number	Share (%)	Number	Share (%)	Number	Share (%)
<b>African</b>	15,825,035	77.44	12,671,070	74.81	4,122,725	81.22	3,534,904	79.64
<b>Coloured</b>	1,977,240	9.68	1,746,798	10.31	123,314	2.43	113,103	2.55
<b>Indian</b>	513,937	2.52	473,161	2.79	111,373	2.19	106,558	2.40
<b>White</b>	2,117,799	10.3	2,047,715	12.09	718,355	14.15	683,874	15.41
<b>Total</b>	20,434,011	100	16,938,744	100	5,075,767	100.00	4,438,439	100.00

Source: Own calculation from Labour Force Survey 2007

In 2007, there were 20.4 million (16.9 million) individuals in the South African labour force according to the broad (strict) definition. In Gauteng there were 5 million (4.4 million), the largest share taken by the African population with 81.22% (79.64%). The largest contributor to the national labour force is the African population with 77.44% (74.81%). In both samples, the Indian population is the smallest (2.52% / 2.79% and 2.19% / 2.40% respectively).

### 3.3. Unemployment in South Africa and Gauteng

In explaining the labour force, unemployment was defined. Table 7 and Figure 6 represent the unemployment data (in numbers and percentage respectively) for South Africa and Gauteng by population group.

**Table 7: Unemployment numbers for South Africa and Gauteng by population group in 2007**

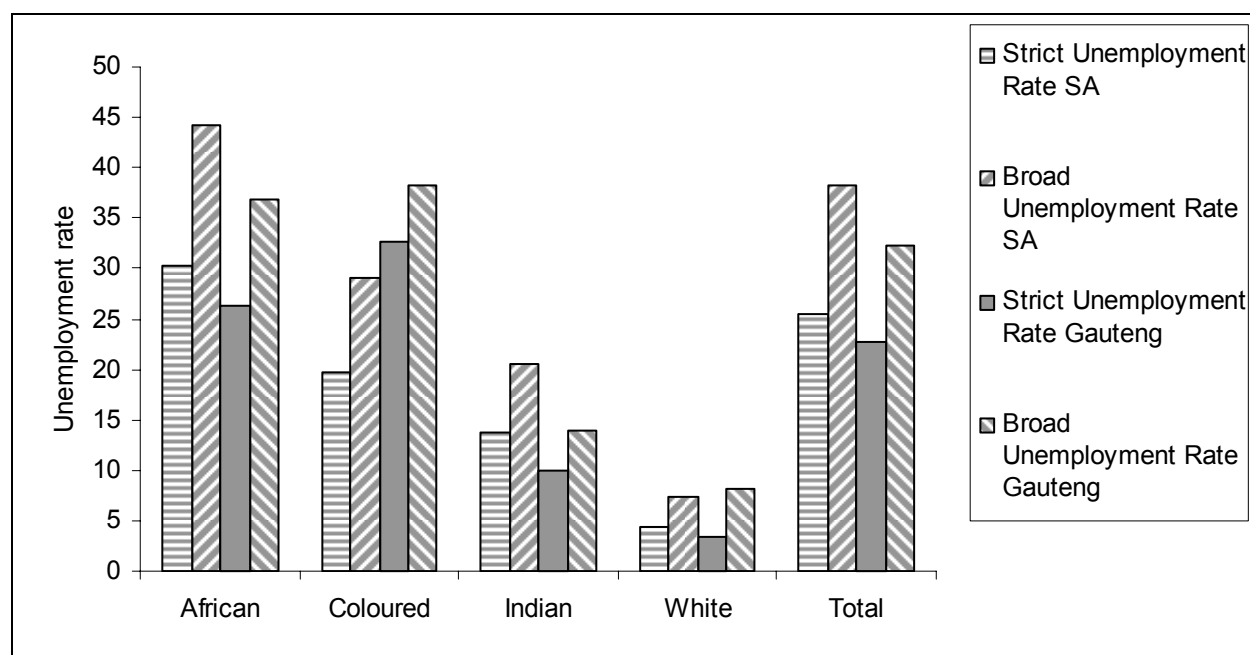
	South Africa		Gauteng	
	Broad	Strict	Broad	Strict
<b>African</b>	6,984,075	3,830,110	1,520,396	932,575
<b>Coloured</b>	576,177	345,735	47,188	36,977
<b>Indian</b>	105,855	65,079	15,459	10,644
<b>White</b>	158,206	88,122	58,046	23,565
<b>Total</b>	7,830,004	4,330,958	1,641,089	1,003,761

Source: Own calculation from Labour Force Survey 2007

Table 7 indicates that the leading population group in terms of unemployment is the African population across all definitions and for both South Africa and Gauteng. The smallest unemployed group is that of the Indian population followed by the White subgroup for South Africa. In Gauteng the smallest group is also the Indian population across both definitions, but is followed by the Coloured population for the broad definition and the White population for the strict definition.

There is a clear trend with Africans having the highest unemployment in South Africa for both definitions (broad 44% and strict 30%) (Figure 6). However, Coloureds in Gauteng have a higher unemployment rate than Africans for both definitions (broad 38% vs. 37% and for strict 33% vs. 26%). Africans and Indians in Gauteng have a lower unemployment rate than the average for South Africa. The Coloured population in Gauteng has a higher unemployment rate than for the Coloured population in South Africa. The White population in both South Africa (4.3% strict and 7.5% broad) and Gauteng (3.45% strict and 8% broad) have significantly lower unemployment rates than the other population groups and the total. The total unemployment rate for the official (strict) definition for South Africa and Gauteng respectively are 25.53% and 22.62%.

**Figure 6: Unemployment rates for South Africa and Gauteng by population group**

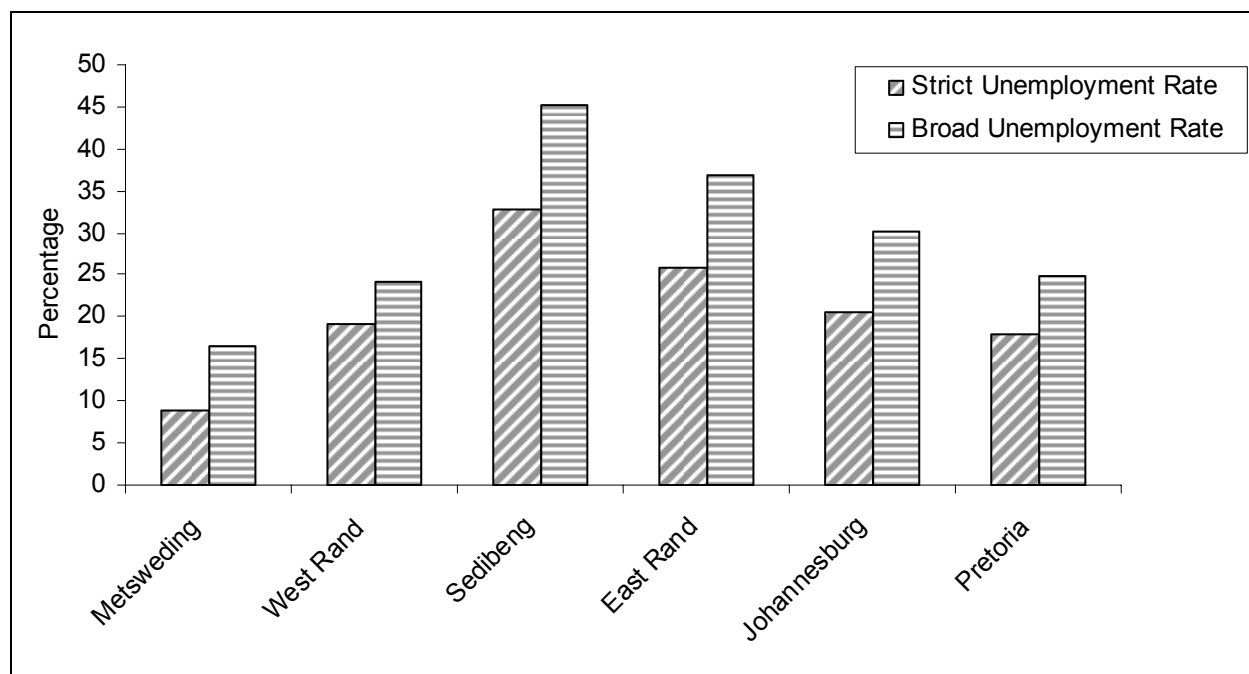


Source: Own calculation from Labour Force Survey 2007

Taking a closer look at Gauteng, the following information regarding district level was obtained. In Figure 7, Sedibeng has the highest unemployment levels considering the broad and strict definitions (45.2% and 32.81% respectively). The lowest unemployment levels are in the Metsweding district (16.62% and 8.97%). The broad and strict rates show a similar trend

towards unemployment, with Sedibeng the highest, East Rand second highest, followed by Johannesburg, Pretoria, West Rand and lastly Metsweding.

**Figure 7: Unemployment rates for districts in Gauteng**



Source: Own calculation from Labour Force Survey 2007

### 3.4. Work-force and employment in Gauteng agriculture

A work-force is defined as all individuals that are able to work, of working age and employed according to various dictionaries ([www.thefreedictionary.com](http://www.thefreedictionary.com) ; [www.patana.ac.th](http://www.patana.ac.th) ; [www.allwords.com](http://www.allwords.com)), although Wikipedia ([www.wikipedia.org](http://www.wikipedia.org)) excludes the management and only refer to manual labour. For the purpose of this report, the full definition (including management) will be used to avoid making sample sizes too small by excluding management data.

The agricultural work-force, thus those between 15 and 65, and as previously mentioned in the agricultural industry or occupation, is listed for both South Africa and Gauteng for 2007 in the subsequent table:

**Table 8: South African and Gauteng agricultural work-force**

South Africa			Gauteng	
	Number	Share	Number	Share
<b>African</b>	741,228	75.82	49,898	86.43
<b>Coloured</b>	143,172	14.65		
<b>Indian</b>	5,458	0.56		
<b>White</b>	87,728	8.97	7,836	13.57
<b>Total</b>	977,586	100	57,734	100

Source: Own calculation from Labour Force Survey 2007

As can be seen in Table 8, the African population dominates the South African agricultural work-force as well as the Gauteng agricultural work-force. There are no Indians or Coloureds in the Gauteng agriculture work-force. The White population's share in both South Africa and Gauteng are 8.97% and 13.57% respectively. Decomposing Gauteng to a district level by gender, the following is obtained:

**Table 9: Agricultural work-force of Gauteng districts by gender in 2007**

	Male	Share	Female	Share	Total	Share
<b>Metsweding</b>	3,030	69.90%	1,305	30.10%	4,335	3,030
<b>West Rand</b>	10,681	55.37%	8,608	44.63%	19,289	10,681
<b>Sedibeng</b>	5,563	97.07%	168	2.93%	5,731	5,563
<b>East Rand</b>	8,381	47.87%	9,126	52.13%	17,507	8,381
<b>Johannesburg</b>	4,200	100.00%	0	0.00%	4,200	4,200
<b>Pretoria</b>	5,533	82.32%	1,189	17.68%	6,722	5,533
<b>Total</b>	37,389	64.70%	20,396	35.30%	57,784	37,389

Source: Own calculation from Labour Force Survey 2007

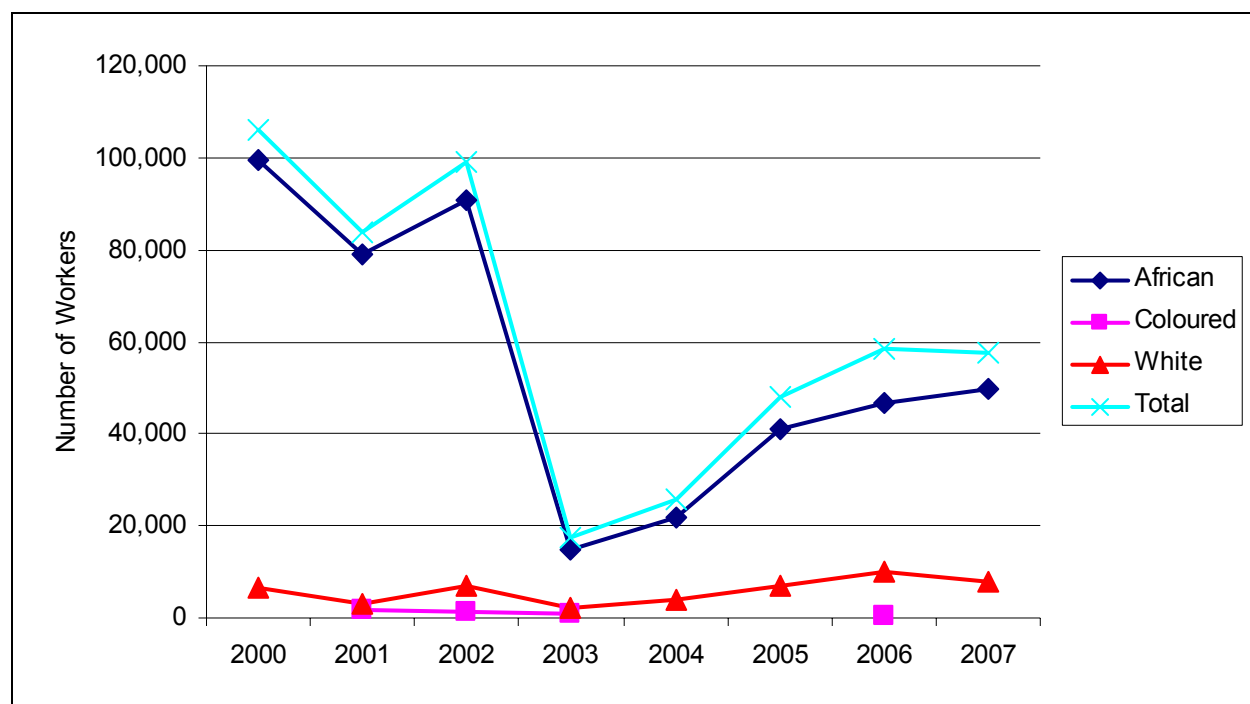
Table 9 illustrates that the majority of the work-force is male, dominating with 64.7% in total. Sedibeng is the most gender unequal with males comprising of 97.07% of the work-force. The East Rand is the most gender equal. The West Rand have the most workers (19 289 workers) and the Metsweding the least (4 335 workers).

### 3.4.1. *Employment over time*

Employment for the agricultural sector has been in the limelight the past few years due to reports stating the steady decline within the sector. According to Statistics South Africa the definition of an agriculture worker is if (s)he claims that the main industry that (s)he works in is that of Agriculture, Fishery and Hunting, or if the main occupation is skilled agriculture

disregarding the industry. The industry Agriculture, Fishery and Hunting was evaluated, and workers of only agricultural activities were used in this report. The following figure was obtained from the data:

**Figure 8: Agricultural employment figures from 2000 to 2007**



Source: Own calculation from Labour Force Survey 2000-2007

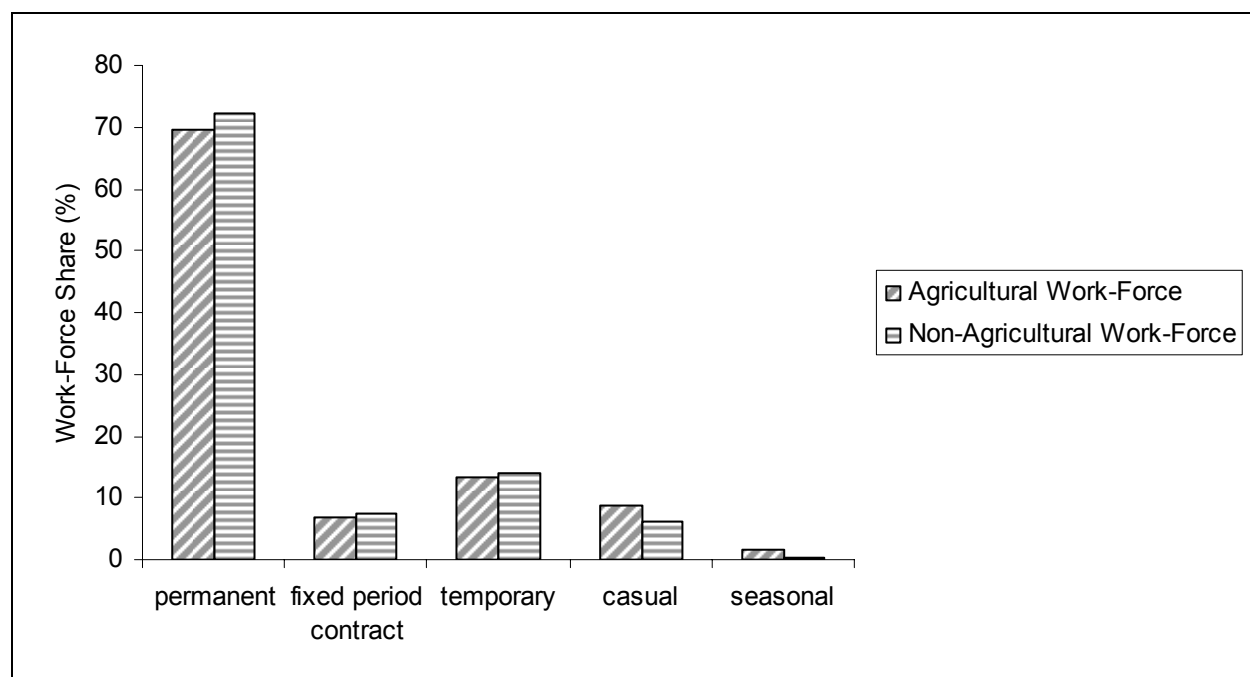
It can be observed in Figure 8 that there is definitively a sharp decreasing trend in total employment from 2000 until 2003 with an increase since then. The African workers leaving and joining the sector are mostly responsible for this occurrence as their trend follows a similar path as the trend for total employment. African employment decreased from 99,572 in 2000 to 49,898 in 2007. White employment varied between 6,386 and 7,836 workers. Further analysis needs to be done in order to investigate the reasons behind this declining trend.

### 3.4.2. Employment status

The Labour Force Survey asks various work-related questions to employed respondents, one being that of the terms of employment. Respondents had to classify whether their job was permanent, a fixed period contract, temporary, casual or seasonal. The following results in Figure 9 were obtained for 2007 while Figure 10 indicates the period 2000-2007:



**Figure 9: Work status for Gauteng work-force in 2007**

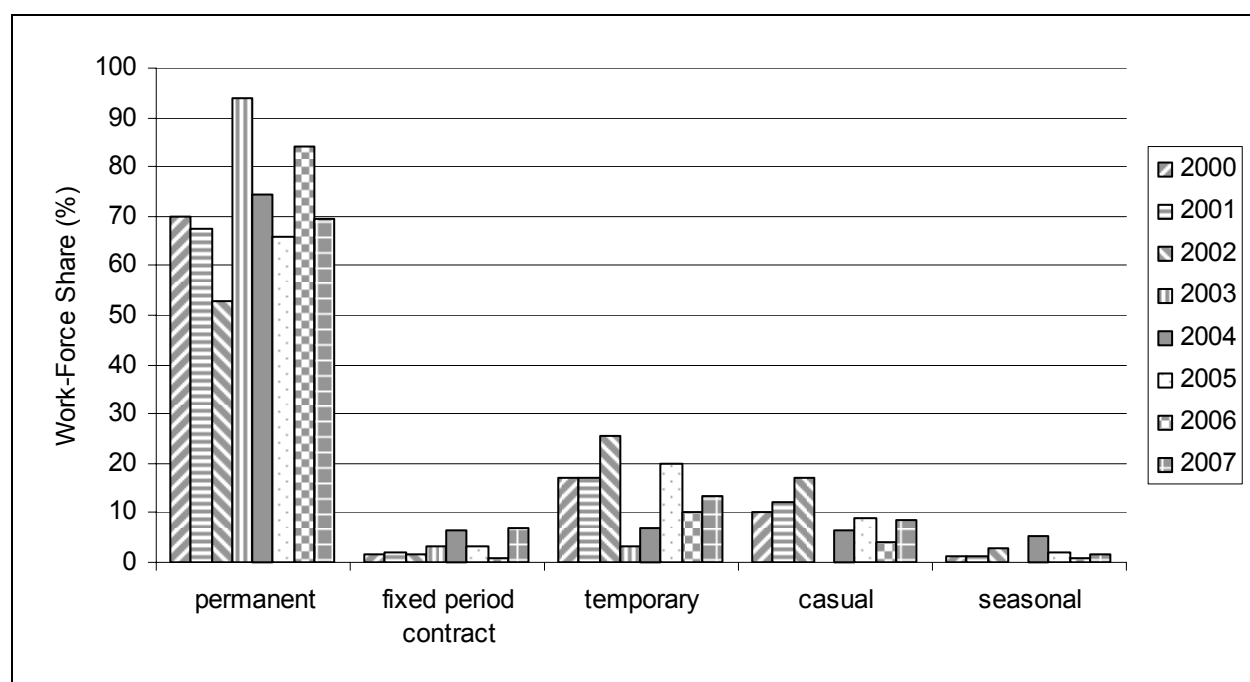


Source: Own calculation from Labour Force Survey 2007

The agricultural work-force has predominantly a permanent work-force, with the temporary work-force at second highest. The share of seasonal workers in the Gauteng agricultural sector is 0.18%, and only 1.55% of workers in the non-agricultural sector are seasonal workers.

Figure 10 presents the work status data from 2000 till 2007 for the agricultural work-force:

**Figure 10: Work status over time**



Source: Own calculation from Labour Force Survey 2000-2007

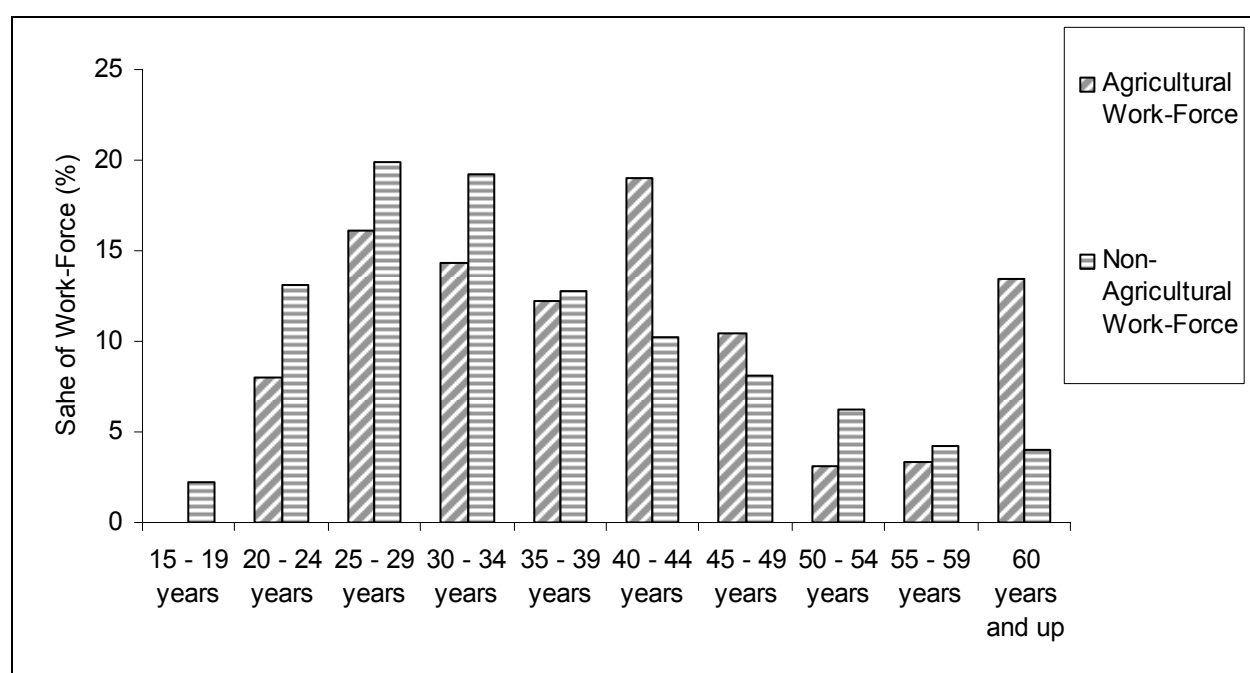
This figure indicates that across all work statuses, fluctuations occurred over time. There is no clear increasing or decreasing trend with any work status. This might be due to the unstable work-force (as seen in Figure 8) or data discrepancies.

### 3.5. Characteristics of Gauteng agricultural work-force

#### 3.5.1. *Age structure*

Comparing the agricultural work-force with the non-agricultural work-force (thus those in other industries), Figure 11 was obtained.

**Figure 11: Age structure of agricultural and non-agricultural work-force in Gauteng**



Source: Own calculation from Labour Force Survey 2007

The non-agricultural and agricultural work-forces reaches a peak between ages 25 and 30. The non-agricultural work-force has a steeper incline and sharper decline than the agricultural work-force, indicating the variance between age groups within the agricultural sector. Focusing on the older age groups (60 years and up) there is a larger share of workers of those age groups in the agricultural sector (13.49%) than in the non-agricultural sector (4.02%).

#### 3.5.2. *Location and occupation*

The agricultural workers also indicated where the location is of their work. The majority (44.72%) work on the owner's farm whereas the minority (0.44%) can be found at a service outlet. The second most common place where agricultural activities take place is in a formal business premises. Table 10 present the full results, including the number and share.

**Table 10: Location of Gauteng agricultural work-force**

	Number	Share %
In the owner's home/On the owner's farm	25,843	44.72
In someone else's home / Private household	3,017	5.22
Inside a formal business premises such as factory or shop	21,229	36.74
At a service outlet such as a shop, school, post office etc	256	0.44
At a market	3,340	5.78
On a footpath, street, street corner, open space or field	2,405	4.16
No fixed location	1,694	2.93
<b>Total</b>	<b>57,784</b>	<b>100</b>

Source: Own calculation from Labour Force Survey 2007

The occupation of agricultural workers, as classified by Statistics South Africa, is expressed in Table 11. As can be seen through Table 11, the elementary occupation dominates (63.75%), while clerks are the minority (0.48%). It can be seen that only 15.74% of workers in the agricultural sector in Gauteng is classified as skilled agricultural workers.

**Table 11: Occupation of Gauteng agricultural work-force**

	Number	Share %
Legislators, senior officials and managers	4,585	7.94
Professionals	1,443	2.5
Technicians and associate professionals	1,655	2.87
Clerks	277	0.48
Service workers and shop and market sales worker	1,279	2.22
Skilled agricultural and fishery worker	9,087	15.74
Craft and related trade workers	1,923	3.33
Plant and machinery operators and assemblers	681	1.18
Elementary occupations	36,804	63.75
<b>Total</b>	<b>57,734</b>	<b>100</b>

Source: Own calculation from Labour Force Survey 2007

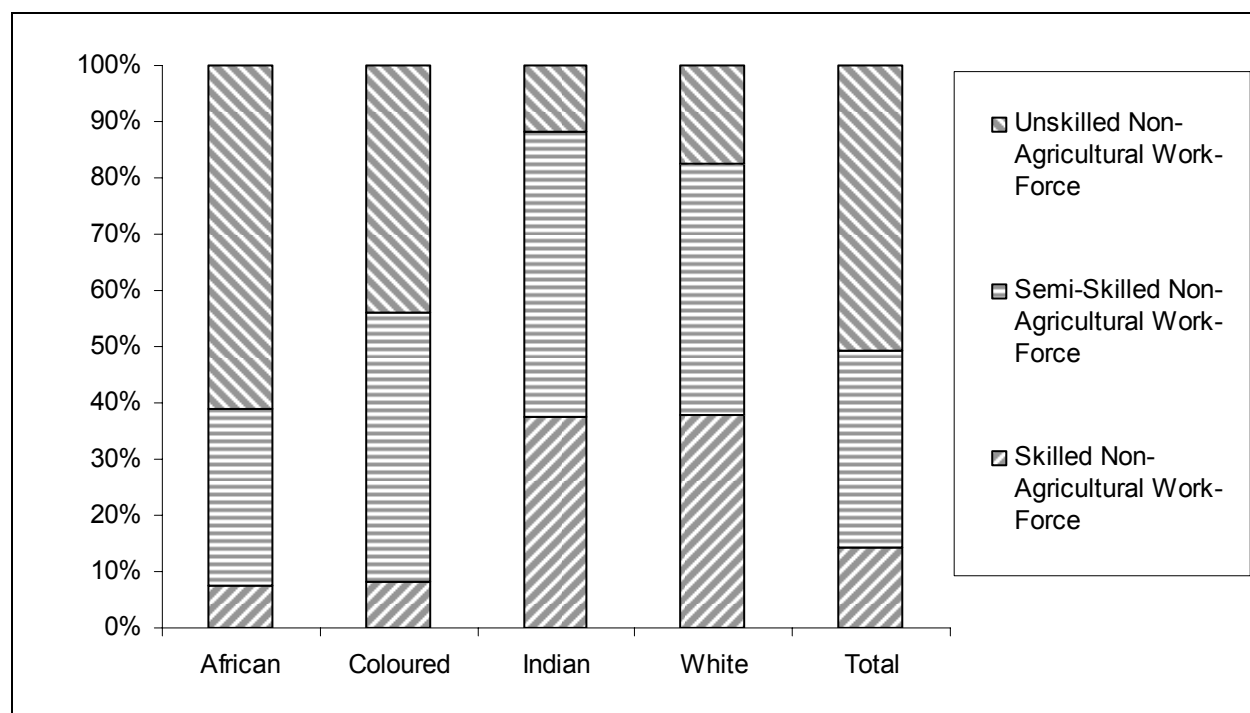
### 3.5.3. Skills level

The occupation of workers is an indicator of the skills level of the individual. Workers working in a legislative, senior official, manager or professional occupation are classified as skilled workers by Statistics South Africa. Semi-skilled workers are technical and associated professionals, clerks, and service and sales workers. The rest, skilled agricultural and fishery workers, craft

workers, plant and machine operators and assemblers, elementary occupation and domestic workers, are classified as unskilled labour.

The subsequent figures were obtained for the skills level in 2007 of every population group in the non-agricultural sector:

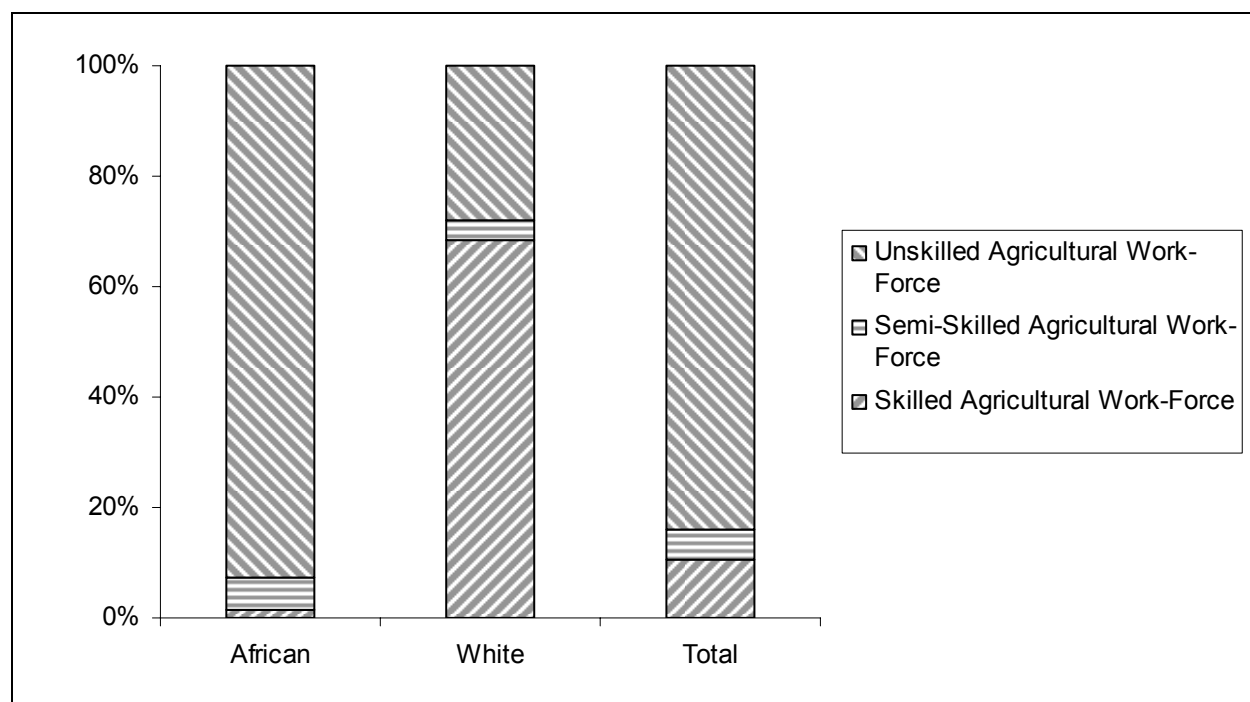
**Figure 12: Skills level of the Gauteng non-agricultural work-force in 2007**



Source: Own calculation from Labour Force Survey 2007

Figure 12 represents the skills level for every population group for the non-agricultural sector in 2007. There is clear distinction between African and White workers, with the majority (83%) of White workers being skilled or semiskilled workers and the minority (39%) of the African workers being skilled or semiskilled workers. Looking at the skill levels of agricultural workers in Gauteng in Figure 13, the same trend can be observed. Almost none of the African workers are skilled (1.32%), while 68.49% of White agricultural workers are skilled. The whole sector is also more dominated by unskilled labour, compared to the non-agricultural sector.

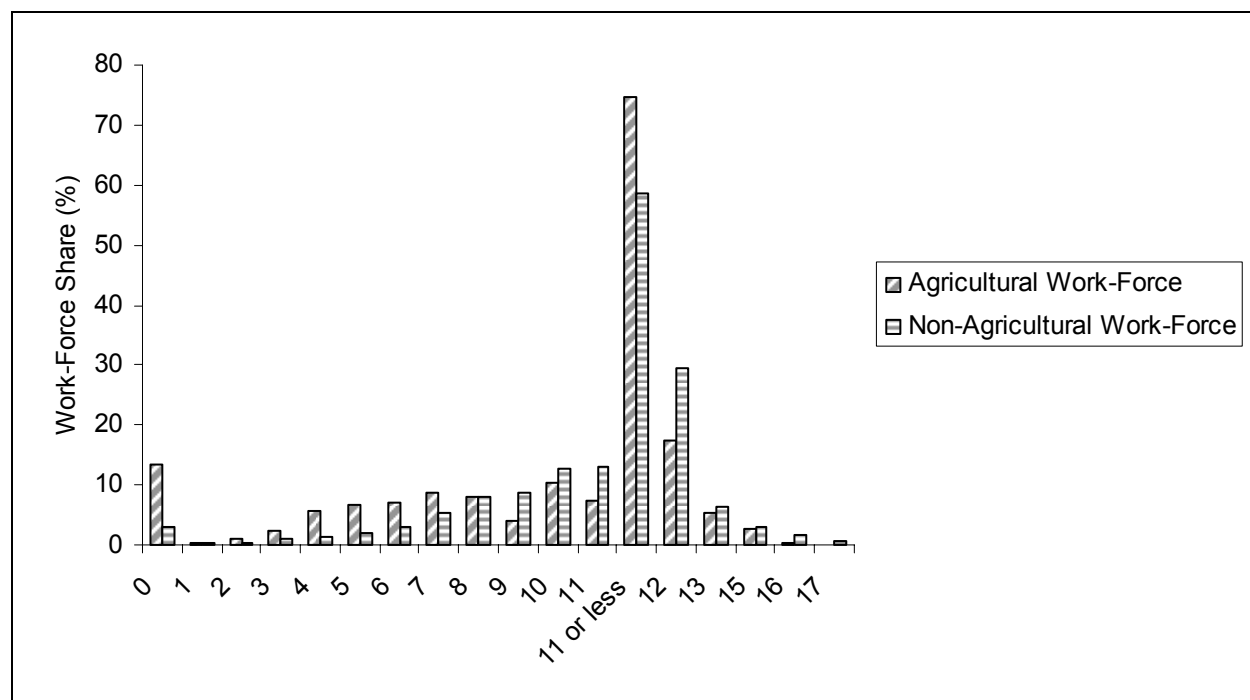
**Figure 13: Skills level of the Gauteng agricultural work-force**



Source: Own calculation from Labour Force Survey 2007

Examining the education level of agricultural workers and non-agricultural workers, the following bar graph (Figure 14) contains the information:

**Figure 14: Highest education received for agricultural and non-agricultural workers**

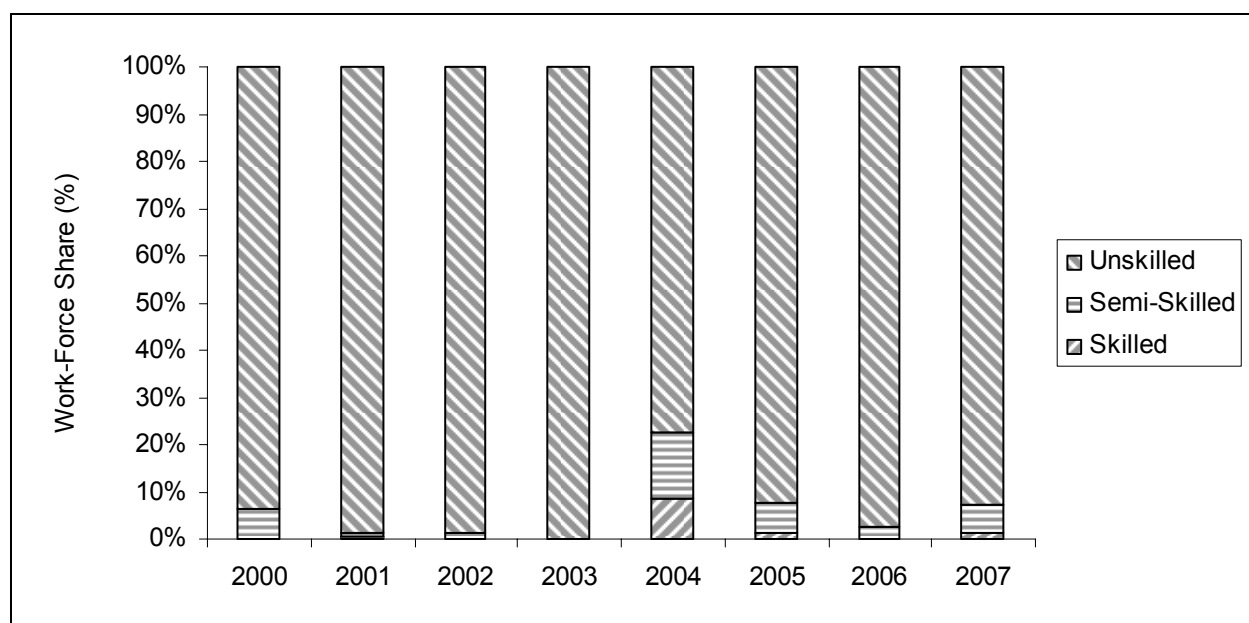


Source: Own calculation from Labour Force Survey 2007

The graph clearly shows that the majority of agricultural workers do not have a matric qualification (74.49%), although some of them received high school education. Only a small portion received more than 12 years of education (25.51%). The non-agricultural work-force has a higher share of matriculant workers (29.45%) and workers with post-matric education (11.98% compared to 8.12% of agricultural work-force). This clearly indicates that the agricultural work-force has less formal education than the non-agricultural work-force.

Looking at the skills level trend through years 2000 till 2007, the subsequent figures illustrate each population group's skills level:

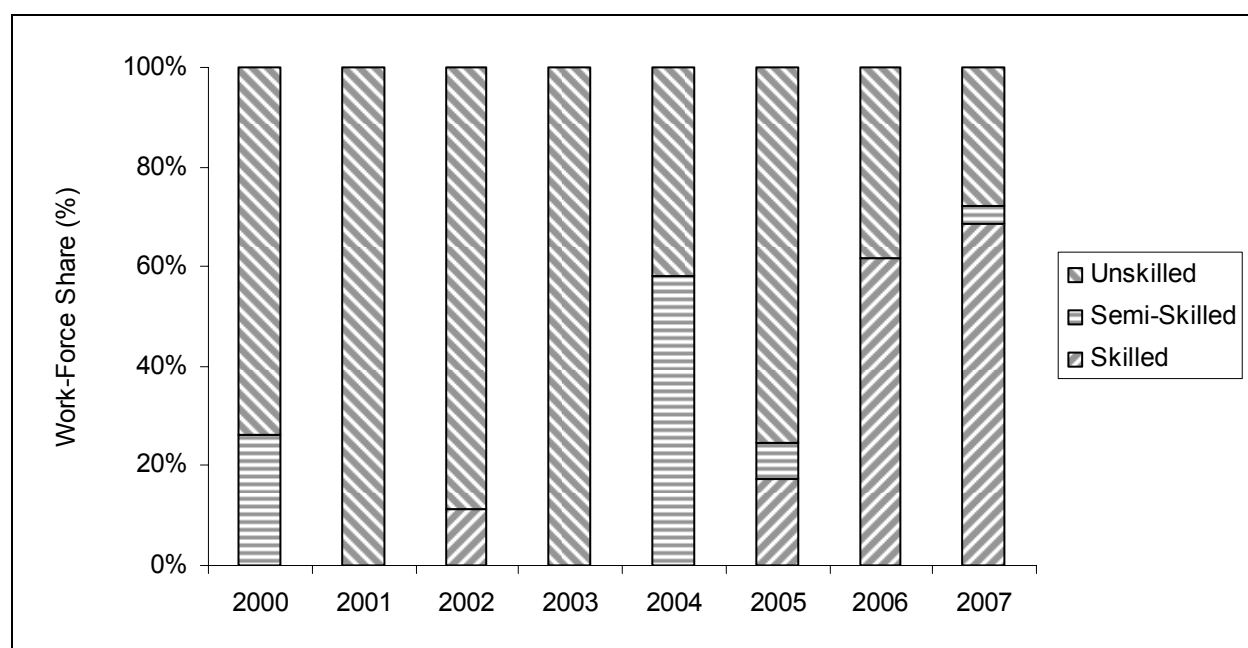
**Figure 15: Skills level for Africans in the agricultural work-force**



Source: Own calculation from Labour Force Survey 2000-2007

The skills level of the African population group did not change dramatically from 2000 (Figure 15) except in 2004. This can be due to data discrepancy or over reporting. The majority of workers are unskilled, without any increase in the other two levels. This is a major source of concern, indicating that the African agricultural workers remain unskilled.

The next figure (Figure 16) indicates the skills levels of the White agricultural work-force in Gauteng. A very erratic pattern can be observed, with skills changing from year to year. This can be due to the small sample size of the White work-force that gives insufficient data to draw statistically significant results. The only significant result is that unlike the African work-force, the White work-force are characterised with more skilled labour.

**Figure 16: Skills level of the White agricultural work-force**

Source: Own calculation from Labour Force Survey 2000-2007

There is a skills gap between race groups in the Gauteng agricultural sector, with the Whites as the only notable skilled group. According to the National Scarce Skills list of 2007 (Department of Labour), farm managers are rated as one of the most scarce skills in South Africa, while agricultural technicians, plant operators, crop farm workers and livestock farm workers also appear on the list. This indicates that there is definitely a need for skilled agricultural workers.

#### 4. Income

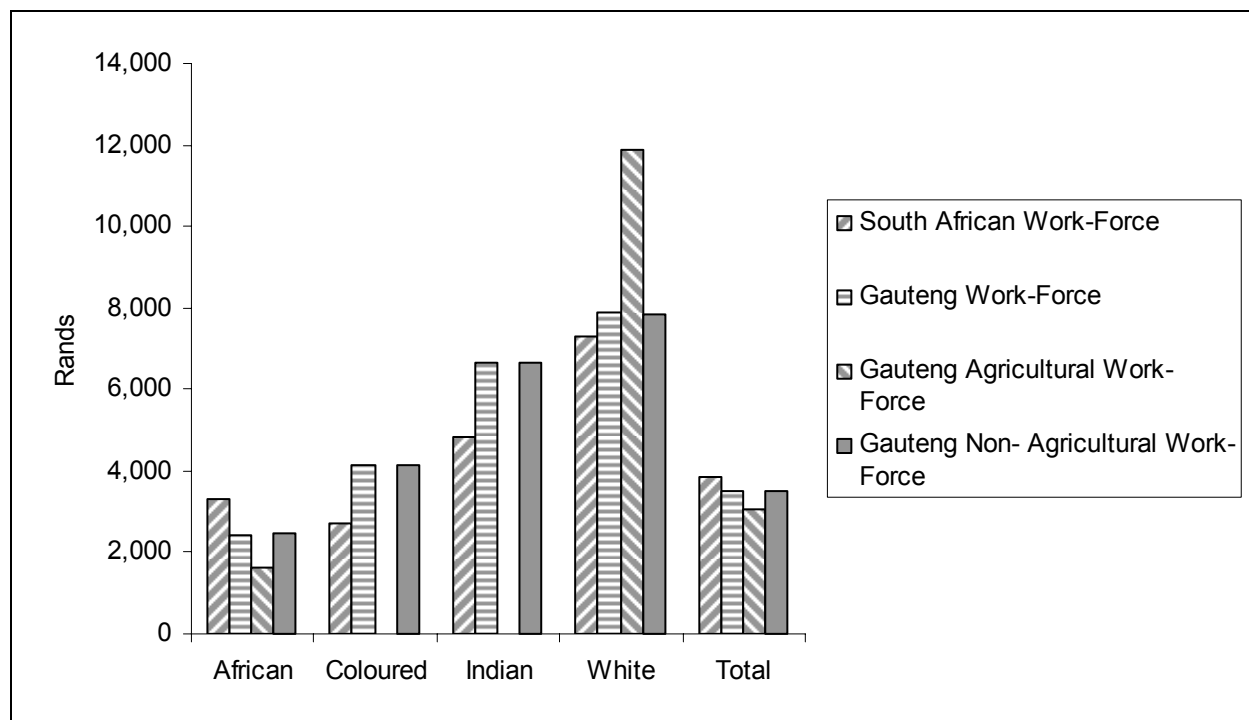
##### 4.1. South Africa and Gauteng

Respondents were asked about their income, and as explained previously, it was reported in either actual values or income bands. A value was dictated to each band by using the Interval Regression method as indicated in 2.3.2. Three different reporting measures were used to seek variation and to verify for consistency. The first figure reports the results for the earnings for the working individual. The second figure represents the per capita household earnings while the last figure embodies the median incomes for working individuals. The first and second figures' income is an average and all three were adjusted for the consumer price index (CPI) making it real incomes. Therefore all values are in 2000 prices to have consistency when comparing from 2000 to 2007.

The subsequent figures represent the results of the analysis in 2007. It must be remembered that earnings used were total salary of main job, therefore excluding any

remittances, social grants or payments in kind. Home consumption from home production is also excluded. Comparisons are made between the South African, Gauteng, Gauteng agricultural and Gauteng non-agricultural work-forces.

**Figure 17: Real mean monthly income from main source by race for 2007**

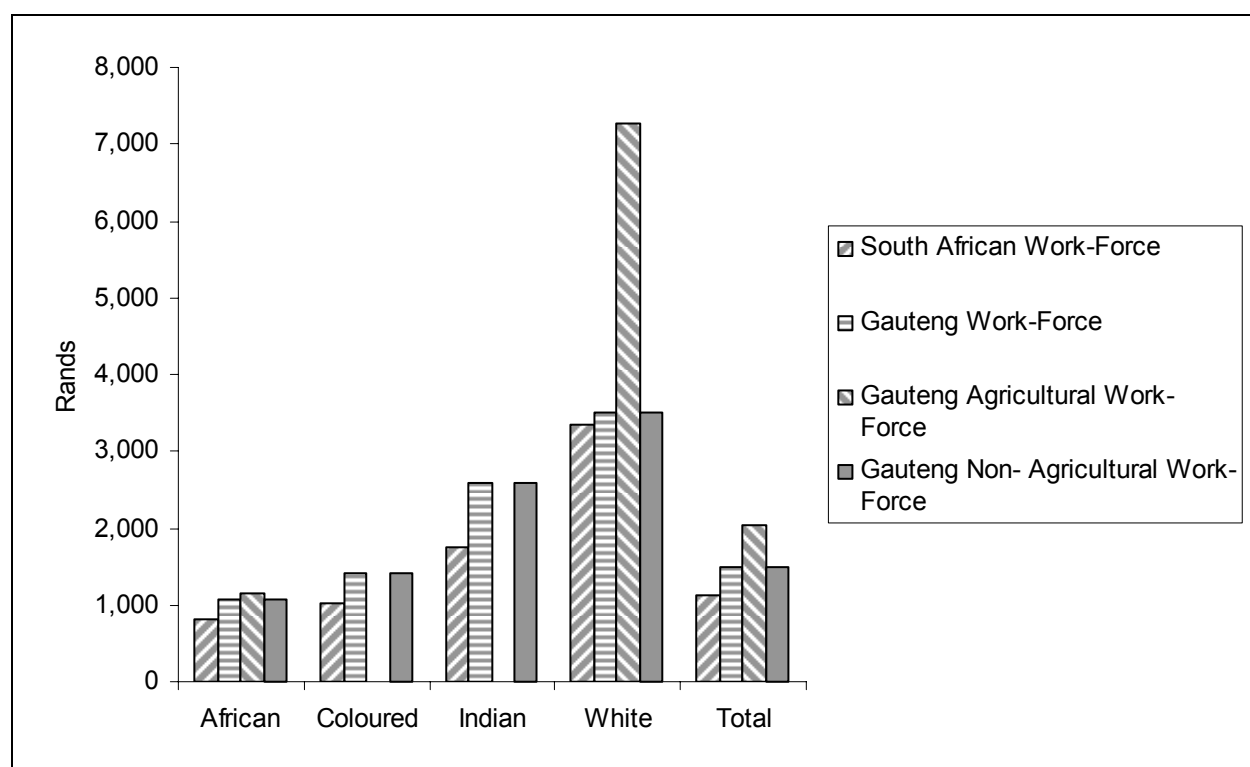


Source: Own calculation from Labour Force Survey 2007

Gauteng's mean monthly income in Figure 17 is lower than that of South Africa for the whole province and for the African population subgroup. White and Indian work-forces earn on average more in Gauteng than in South Africa. Across the races, the non-agricultural work-force earns relatively the same as the province in general, but the agricultural work-force differs. The African agricultural work-force earns less than their counterparts, whereas the White agricultural work-force earns more than their counterparts.

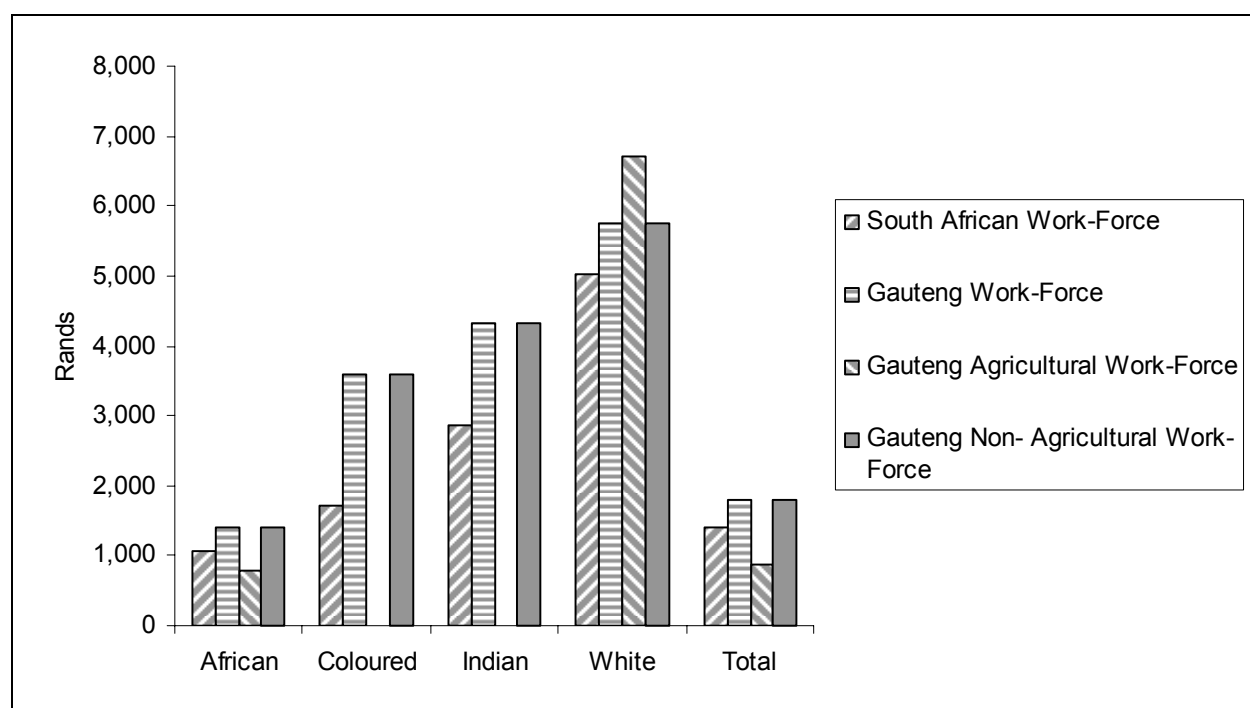
Looking at the mean real household income per capita for 2007, a different pattern as the individual income is found. Household earnings are thus divided by household size, disregarding other income sources.



**Figure 18: Mean monthly real household income per capita by race for 2007**

Source: Own calculation from Labour Force Survey 2007

In Figure 18 the Gauteng work-force earns on average more than their counterparts in South Africa. Again, the non-agricultural households display a similar pattern as that of the province as a whole. White agricultural households receive, like in the previous graph, higher incomes than that of the non-agricultural households. But the African agricultural households do not receive on average less than the non-agricultural work-force as in Figure 17, but more. This indicates that the individual in the agricultural sector does not receive the same income as the non-agricultural worker, but the agricultural work-force' households have a higher income per capita than the non-agricultural work-force.

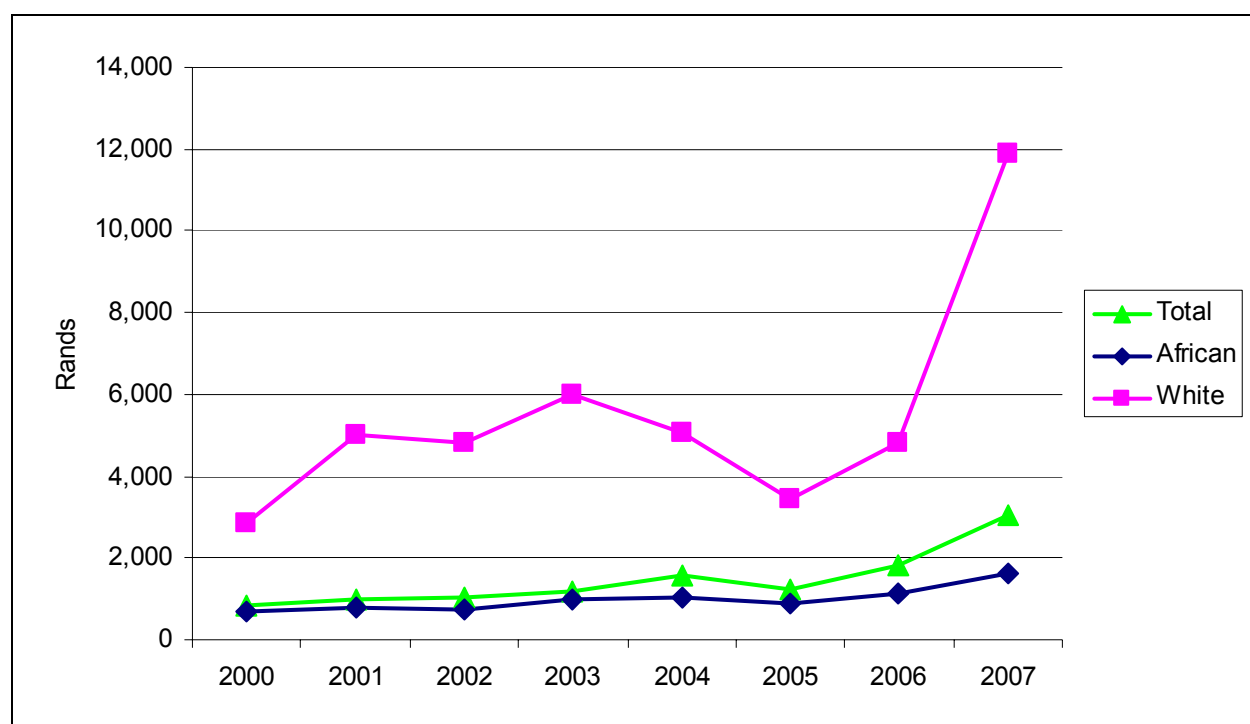
**Figure 19: Monthly median income for individuals by race for 2007**

Source: Own calculation from Labour Force Survey 2007

The median incomes are illustrated above in Figure 19 to correct for any measurement error with regards to mean incomes. The mean can be influenced by outliers, and in a country like South Africa with the high inequality, the median better reflects the true nature of profiles. The median represents the 50<sup>th</sup> percentile, meaning 50% of the individuals receive equal or less than the mentioned income. Hence this figure shows a lower income across all population groups compared to the real mean monthly income reported in Figure 17. The trend remains the same as in Figure 17, with Whites earning the most and Africans earning the least. White agricultural households also have the highest median income, and also Gauteng is doing financially better than South Africa concerning White incomes. Across the other races, incomes in Gauteng are higher than that of South Africa, while the agricultural sector is earning a lower median income.

#### 4.2. Gauteng agricultural work-force

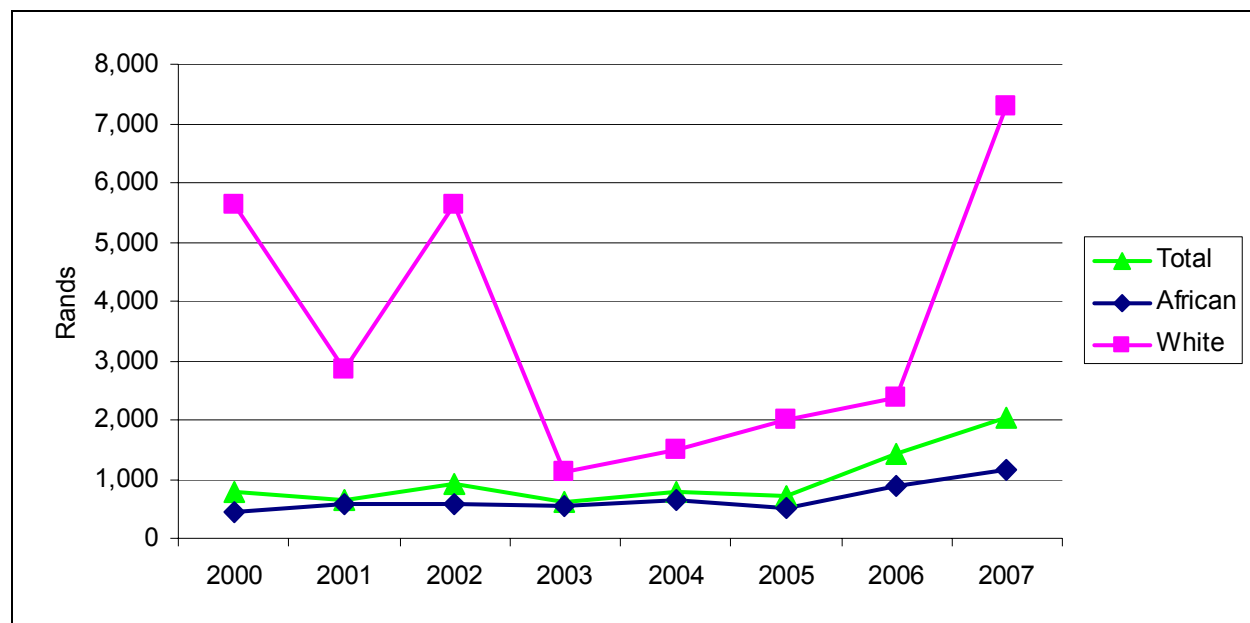
Taking a closer look at the agricultural work-force in Gauteng over time, the subsequent figures were obtained:

**Figure 20: Real monthly mean income for individuals working in agriculture from 2000**

Source: Own calculation from Labour Force Survey 2000-2007

Above figure (Figure 20) clearly indicates the huge difference between the White population's mean incomes compared to that of the African population. The White population's average income is quite volatile, but on an upwards trend. The African population's average income is also increasing over time, but on a steadier slope. The total average income is thus increasing over time.

**Figure 21: Real mean household income per capita for all agricultural households since 2000**



Source: Own calculation from Labour Force Survey 2000-2007

The household earnings are presented above (Figure 21) for all agricultural households, thus all households that have a member / members in the agricultural sector. The figure signifies a trend similar to that of the individual earnings profile for the African and total population. The White population's average household income per capita varies from year to year. This can be due to various reasons. One of the reasons can be that the White agricultural work-force is self-employed and thus measuring household income is tricky. Other reasons might be data discrepancies or small sample size.

**Figure 22: Monthly median incomes of individuals in agriculture since 2000**

Source: Own calculation from Labour Force Survey 2000-2007

The trend stays the same within the median income (Figure 22) as for mean income, showing a wide disparity between White's incomes and the African population. Concluding from the three graphs that indicates income over time, it can be said that real income did increase over time for Africans, but there is still a wide gap between White mean and median income and that of the African agricultural work-force.

#### 4.2.1. Beneficiaries from agricultural activities

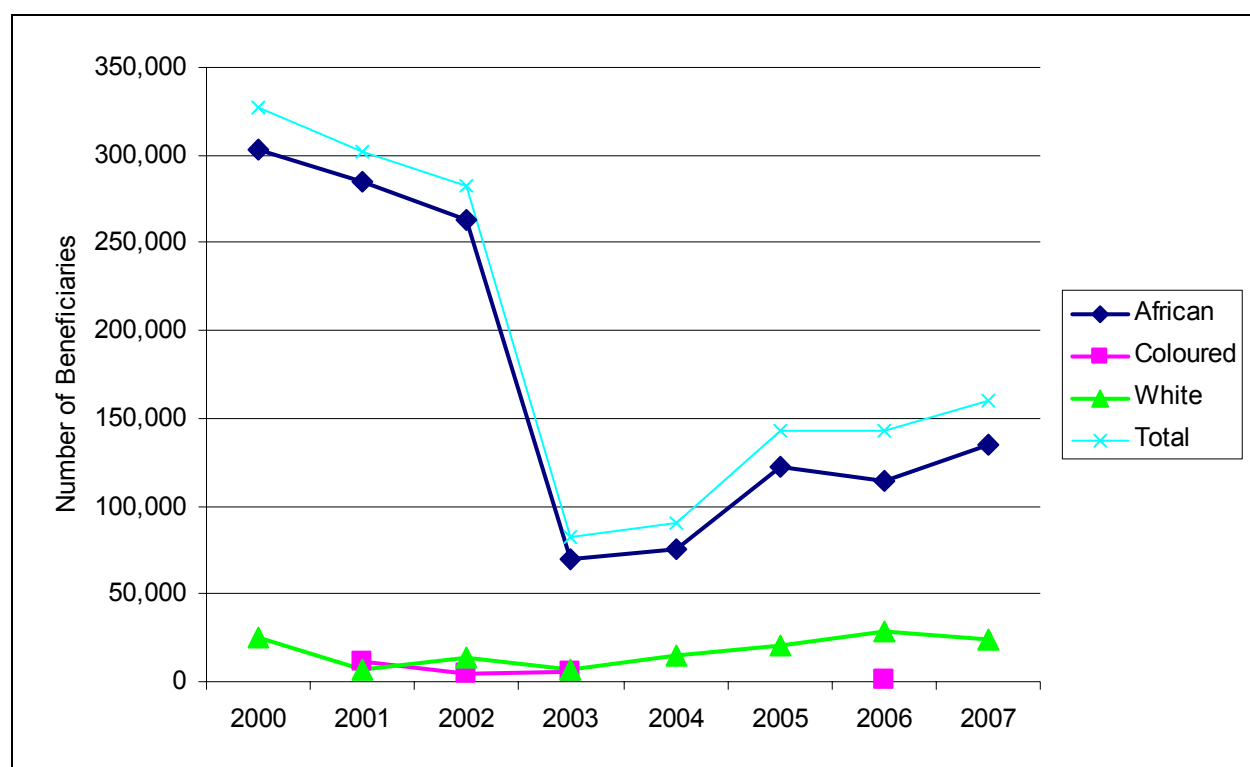
Considering the number of beneficiaries of the agricultural workers, the following table and figure were obtained. Beneficiaries were defined as the number of people in a household with an agricultural employee amongst them. But there are two different reporting measures. The first measures all beneficiaries, thus all individuals that get affected by agricultural activities, meaning a household with four members, all employed, will be beneficiaries if only one works in the agricultural sector. The second reporting measure is that of beneficiaries living in agricultural households where agricultural income is more than 50% of household income, thus as reported in Section 2.2.1.

**Table 12: Number of beneficiaries in 2007**

	<b>All</b>		<b>More than 50%</b>	
	<b>Number</b>	<b>Share</b>	<b>Number</b>	<b>Share</b>
<b>African</b>	135,420	84.78%	85,298	77.82%
<b>White</b>	24,317	15.22%	24,317	22.18%
<b>Total</b>	159,737		109,615	

Source: Own calculation from Labour Force Survey 2007

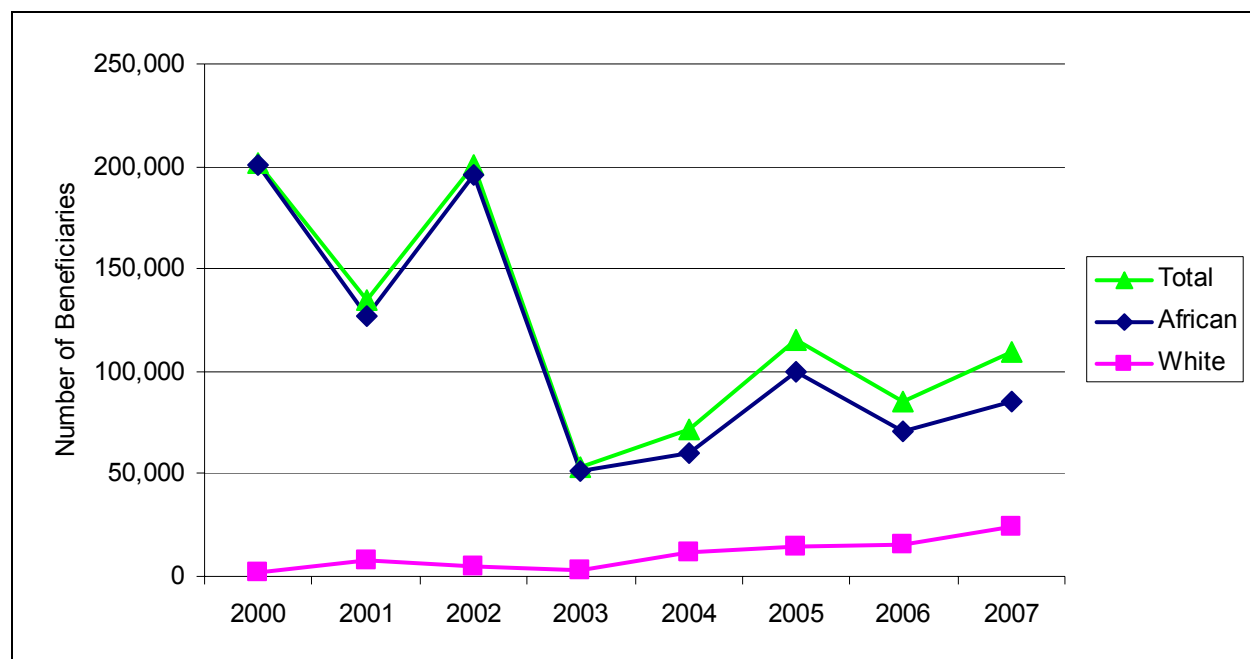
Table 12 indicates that the African population have the highest number of beneficiaries in the Gauteng agricultural sector, dominating by 84.78% and 77.82% respectively. Investigating the trend over years in Figure 23, the total number of beneficiaries and the African beneficiaries follow a similar trend; there is first a decrease and then an increase from 2003. The beneficiaries in African households decrease over time since 2000 from 302 804 to 135 420 beneficiaries. White beneficiaries stayed more or less constant over time (from 24 678 to 24 317) and Coloureds who also benefited from agricultural activities were recorded only in 2001 to 2003 and again in 2006. It can also be seen that the African population have the highest number of beneficiaries from agricultural activities (135 420 beneficiaries in 2007). Figure 4 suggests that until 2005 African households had more members than other population groups. A single African worker therefore needs to care for more dependants than in other population groups. In Figure 23 the increase in African beneficiaries from all household from 2003 till 2007 is an indication of the increase in employment in agriculture, because there is an increase despite the decrease in household size over the same period.

**Figure 23: Number of all beneficiaries from 2000 till 2007**

Source: Own calculation from Labour Force Survey 2000-2007

Taking incomes from other industries into consideration, Figure 24 indicates the number of beneficiaries in households that obtain more than half of their household income from agricultural activities. The trend over time follows the same path as for all beneficiaries, declining over time (from 201 817 to 109 615 in total). The only significant difference is that White beneficiaries increased over time from 1 677 to 24 317 in 2007. In 2007, White beneficiaries for all agricultural households and for those households where agricultural workers earn more than 50% of household income, are equal. This indicates that over time, White agricultural households moved away from just getting some income from agricultural activities, towards being totally dependent on agricultural activities.

**Figure 24: Number of beneficiaries in agricultural households with more than 50% income share**



Source: Own calculation from Labour Force Survey 2000-2007

In general, the total number of beneficiaries, in both reporting measures, declined from 2000 but is again on an upwards trend.

## 5. Poverty indices of Gauteng agriculture

### 5.1. Theory

Poverty, as defined by the *Concise Oxford Dictionary*, “is the state of lacking adequate means to live comfortably and the want of things or needs indispensable to life (Govender, Kambaran, Patchett, Ruddle, Torr and Van Zyl 2007:118). A welfare indicator, usually either income or expenditure, is used to rank individuals or households.

Chambers (1988) claims that there are five dimensions of poverty namely:

1. ‘Poverty proper’ where a lack of adequate income or assets for generation of income are identified;
2. Physical weakness as a result of under-nutrition, disability or sickness;
3. Isolation, physical or social, because of location, access to goods and services;
4. Vulnerability to become more poor and risk to crisis;



## 5. Powerlessness within the existing economic, political, cultural and social sphere.

The first step regarding poverty analysis is to decide on a poverty (living) indicator to use, example income or expenditure, and which poverty dimension will be analysed. Next is to decide on a poverty line which separates the poor and non-poor. Woolard and Leibbrandt (1999:8) state that the point where the line is drawn is usually arbitrary. This can mean that one individual might be classified as poor; while another earning R1 more is qualified as not poor. But a poverty line needs to be drawn to analyse the nature of poverty.

Analysis of the poor usually entails measures of poverty. One of the most common measures to use is the Foster-Greer-Thorbecke class of poverty. The measure can be written as

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^q \left[ \frac{z - y_i}{z} \right]^{\alpha} \quad \text{for } \alpha \geq 0 \quad (5)$$

Where  $z$  represents the poverty line,  $y_i$  is the living indicator (i.e. income or expenditure) and  $\alpha$  symbolizes the aversion to poverty parameter. By adjusting  $\alpha$ , different classes of poverty can be identified. The headcount ratio, which gives the number of people living under the poverty line, is represented by  $\alpha=0$ . Adjusting the value to 1, a poverty gap index is achieved, which indicates the depth of poverty; thus the average inequality amongst the poor. The last index is  $\alpha=2$ , which illustrates the severity of poverty. This option gives the most poor a higher value (weight), and therefore the severity of the poverty gap can be observed. All three measures are expressed in percentage terms, hence  $\alpha=0$  will offer the percentage number of people living under the poverty line,  $\alpha=1$  will provide the inequality for those living under the poverty line, thus between the most poor and the least poor in percentage terms where 1 is equal to perfect inequality and 0 perfect equality. The last measure,  $\alpha=2$ , can be analysed the same as the previous measure, but the poorest weights more.

### 5.2. Poverty indicators from Labour Force Surveys

The living indicator used in the analysis of the Labour Force Survey data is that of per capita household earnings. These earnings were adjusted with consumer price index to achieve real earnings (in 2000 prices) over the years. The data was adjusted for per adult equivalent as proposed by the OECD equivalence scale where household size is equivalent to:

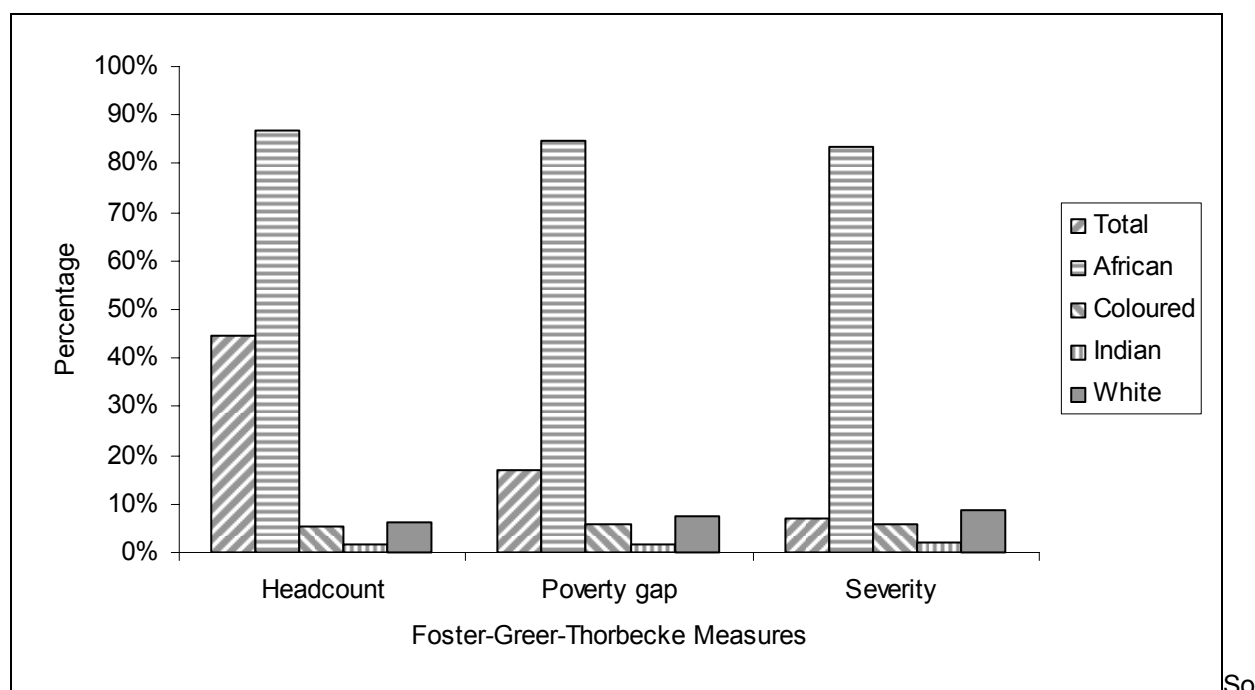
$$E = 1 + 0.5(A) + 0.3(K) \quad (6)$$

Where a value of 1 is assigned to the first household member, 0.5 to additional adult members ( $A$ ) and 0.3 to each child under the age of 15 ( $K$ ).

A poverty line of R 322 per adult equivalent per household per month in 2000 basis year terms was used; this poverty line was decided on by the South African Government as the 'official' poverty line. The advantage is that a 'national' poverty line was decided on, but to its disadvantage it cannot be compared with international standards.

The Foster-Greer-Thorbecke class of poverty indices were used, and the following figures illustrate the results obtained in 2007. The total rate for respectively South Africa, Gauteng and the agricultural households in Gauteng is given together with each population group's share towards the total.

**Figure 25: Poverty rate for South Africa and shares of population groups**

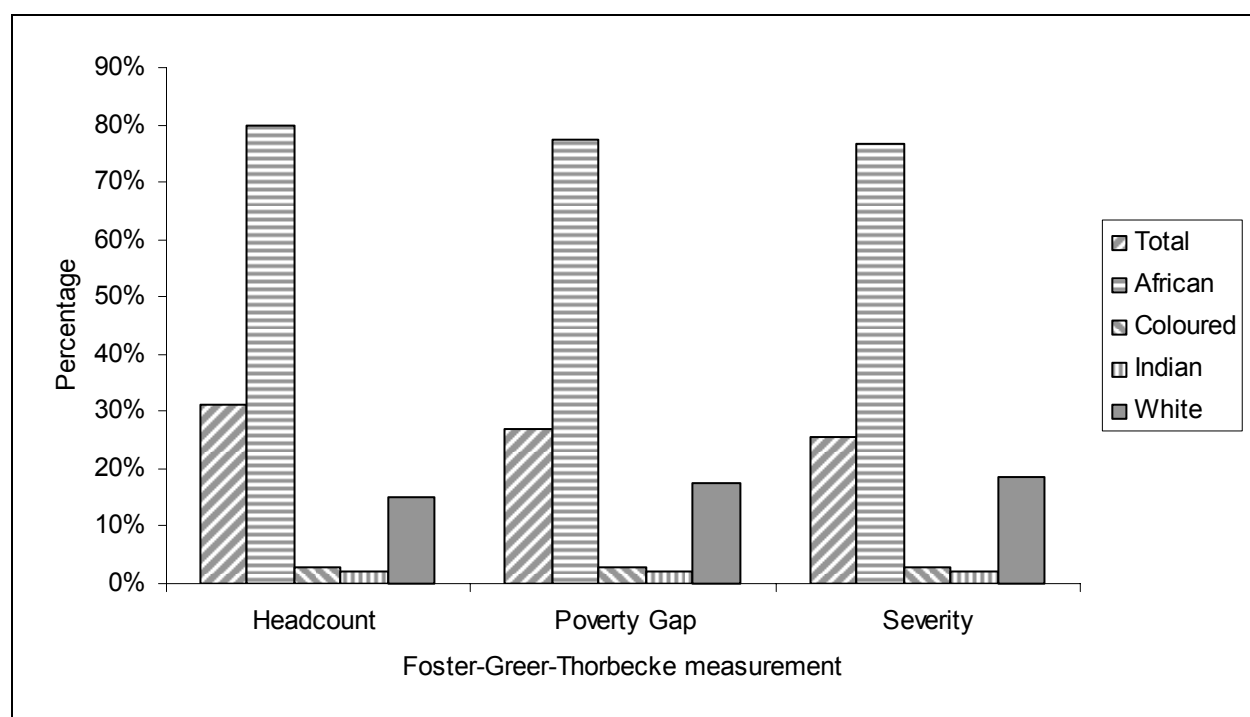


Source: Own calculation from Labour Force Survey 2007

In Figure 25 the total headcount ratio, poverty gap ratio and severity rate of individuals in South Africa are 44.57%, 16.88% and 7.15%. The African population has the highest share in the total for all classes of poverty (86.63%, 84.81% and 83.3%) and the Indians the lowest (1.7%, 1.8% and 1.9%). According to the headcount ratio 44.57% of the people in South Africa live below the poverty line. Africans comprise 86.63% of the people living below the poverty line and Indians comprise only 1.7%. This translates into 21 million people (44.57% of 47 million) in households earning less than R322 per month per adult equivalent (2000 values) with 18 million that are African and 361 164 of the Indian population group. The poverty gap of 16.88% gives an indication of the average inequality between those living below the poverty line, while the severity index of 7.15% gives and indicates the severity of poverty by given a greater weight to the most poor.

Looking at Gauteng in Figure 26, a similar trend can be identified. The African population are dominating the poverty measures while the White populations' poverty increased. The total poverty rates for the different measures in Gauteng are respectively 31.9%, 26.94% and 25.69%. According to headcount ratio about 3 million people in Gauteng are living below the poverty line. The rise of White poverty within the province can be explained by referring back to section 2.1. In Gauteng, the sample size of the White population living under poverty decreases to 3 usable entries (thus entries with information). The rest of the entries (182) are missing values. These missing values are coded as zero in calculating the household income. Household income for the remaining 182 entries is thus lower which results in lower per capita earnings in the household. Households are thus more inclined to fall under the poverty line if information is withheld. If the missing values are disregarded, the White population will only have a poverty headcount ratio of 0.01%. This problem occurs across all population groups, but is less visible because of bigger sample sizes in the other population groups.

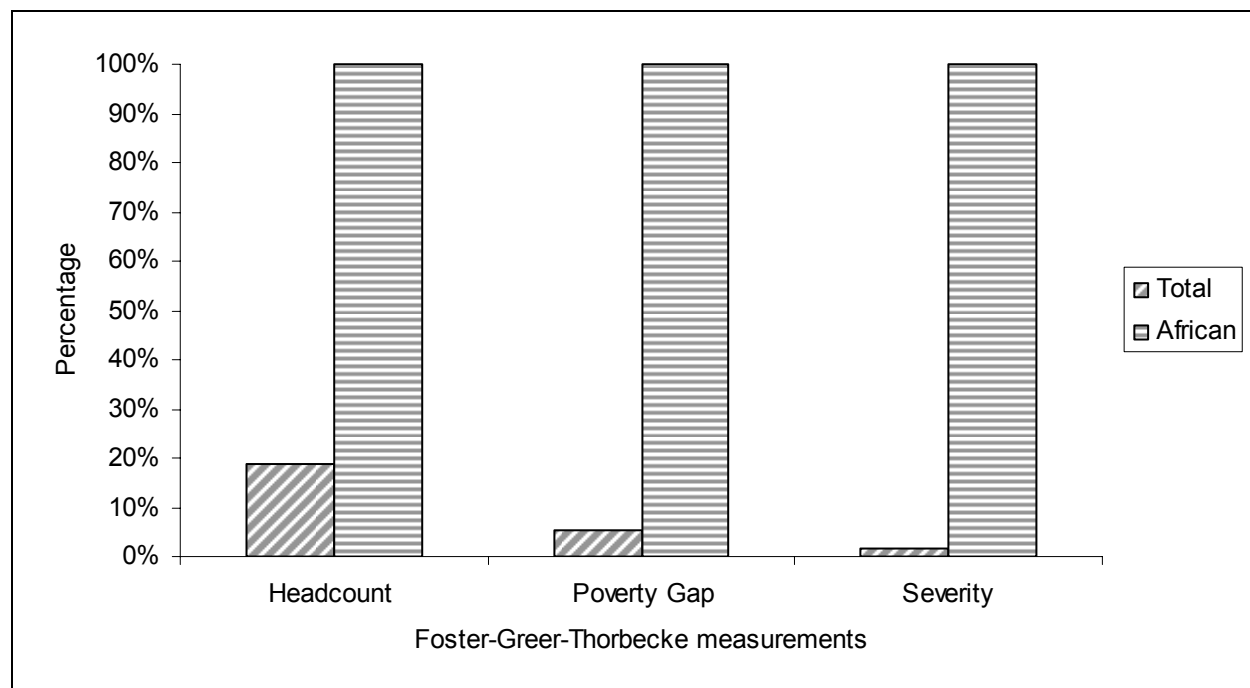
**Figure 26: Poverty rate of Gauteng and shares of population groups**



Source: Own calculation from Labour Force Survey 2007

Gauteng agricultural households (more than 50% of income from agricultural activities) were also analysed in Figure 27 and the results shows a different pattern to that of the rest of Gauteng. There are no Coloured, Indian and White agricultural households recorded who are living below the poverty line. The total poverty rates are 18.98%, 5.11% and 1.68% for respective measures. This translates into around 11 042 Agricultural households that are living below the poverty line. The African populations' share is 100% across all three measures, indicating that there only Africans are recorded as living under the poverty line.

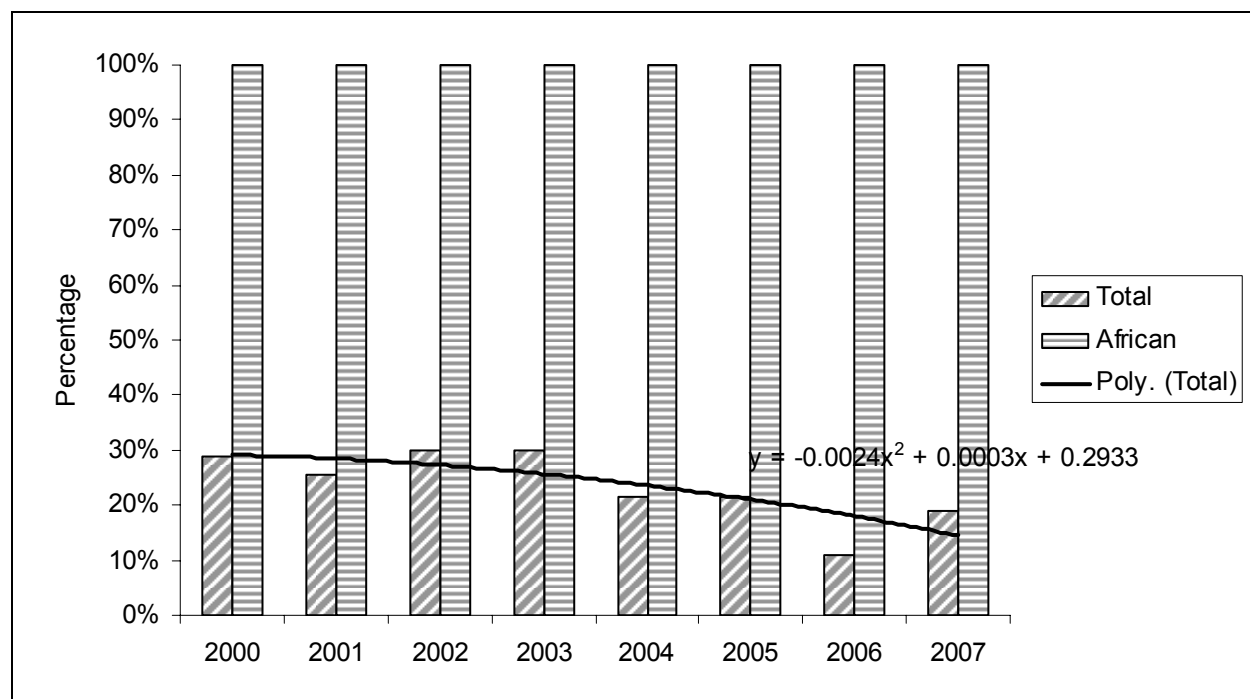
**Figure 27: Poverty rate for Gauteng agricultural households and shares of population groups**



Source: Own calculation from Labour Force Survey 2007

Investigating the trend over years (2000 till 2007) of the Gauteng agricultural households, the subsequent figures were obtained:

**Figure 28: Poverty headcount by year for Gauteng agricultural households**

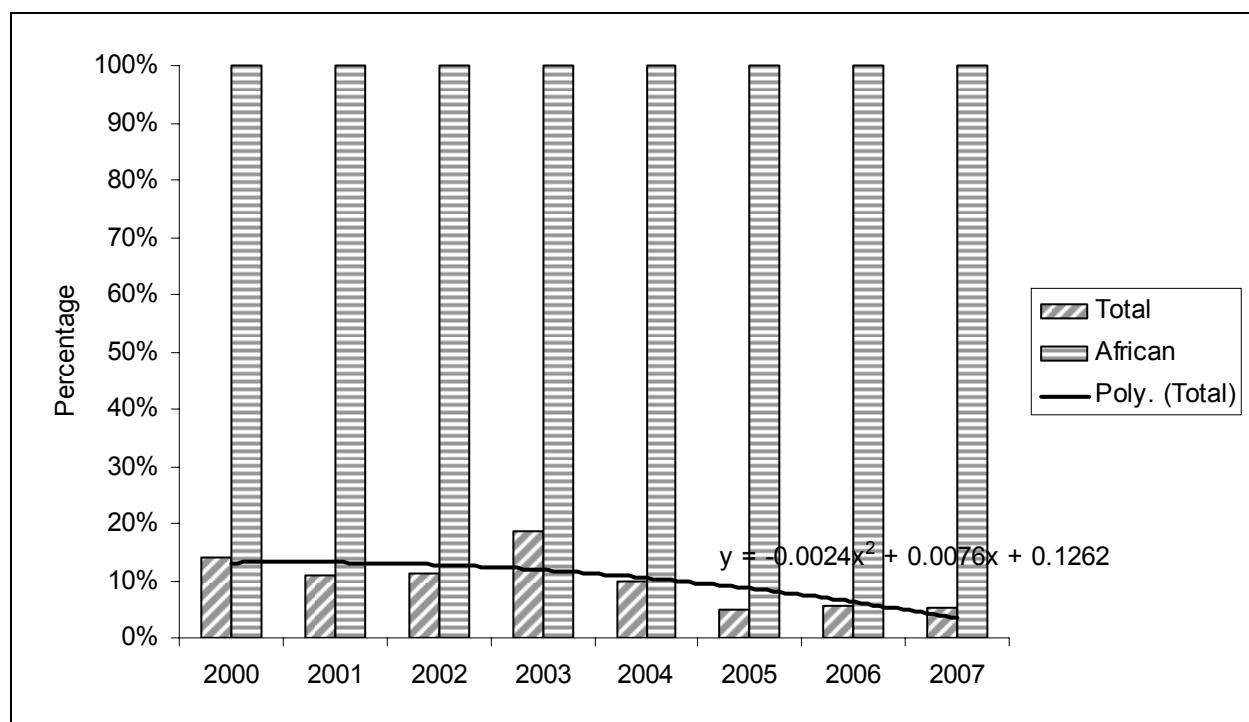


Source: Own calculation from Labour Force Survey 2000-2007

Figure 28 indicates the headcount ratio of individuals in the Gauteng agricultural households and the share of African households towards the total headcount ratio. It is clear that African individuals contribute 100% to overall poverty. There is a general decrease in total poverty between 2000 and 2006, ranging from 28.92% of individuals in agricultural households in Gauteng living below the poverty line in 2000 and 11.12% in 2006. However, this figure increased to 18.98% in 2007.

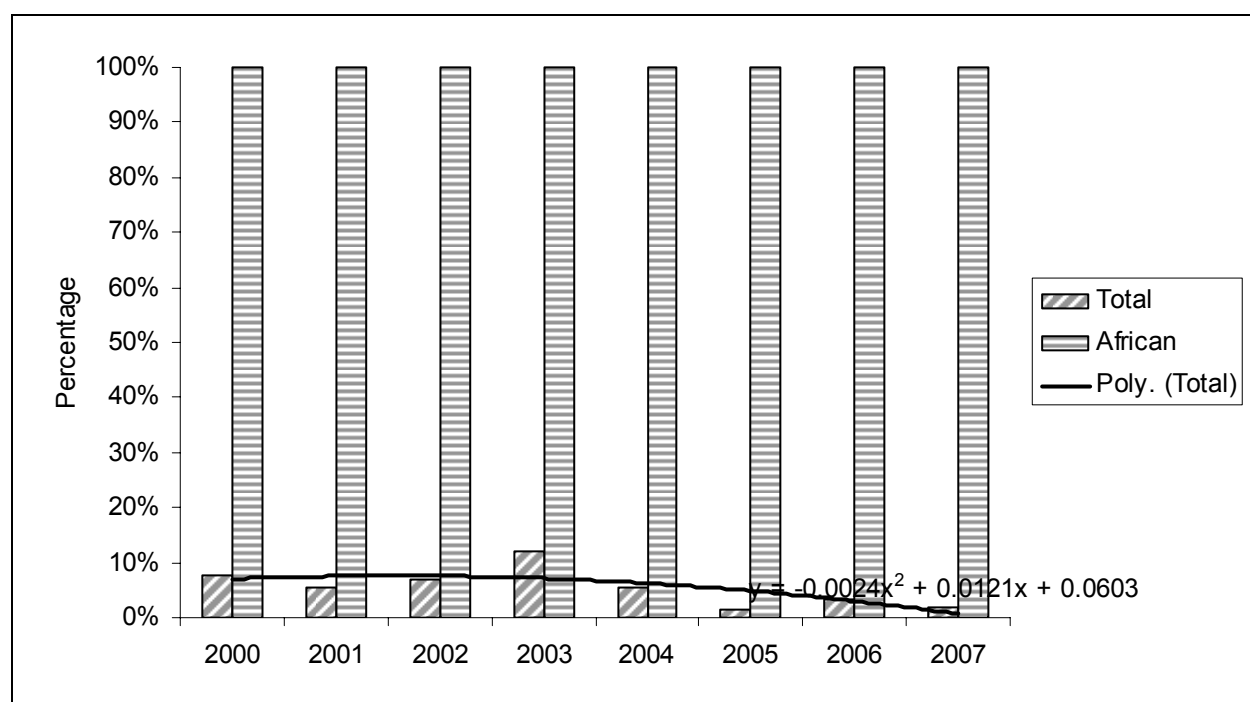
The next figure (Figure 29) indicates the poverty gap ratio:

**Figure 29: Poverty gap by year for Gauteng agricultural households**



Source: Own calculation from Labour Force Survey 2000-2007

The poverty gap ratios over time indicate that individuals in African households have the highest inequality amongst the poor in the province with the total share in the poverty gap measurement. The total poverty gap decreased from 13.92% in 2000 to 5.11% in 2007. This signifies the decrease of inequality within the households living below the poverty line. The African households living below R322 per month per adult equivalent are thus more equal resulting in less extreme poverty. The gap between the extremely poor and those living just below the poverty line has decreased.

**Figure 30: The severity of poverty by year for Gauteng agricultural households**

Source: Own calculation from Labour Force Survey 2000-2007

Again, a similar trend can be seen in Figure 30 as the previous figure. Total severity of poverty has decreased since 2000 and African individuals are again the dominant population group in this poverty measure. The low poverty gap and severity of poverty in Gauteng agricultural households can be connected with inequality in the next section. It will be seen that within group inequality is relatively low compared to between group inequalities. For Gauteng agricultural households the poverty rates according to all measures has decreased when comparing 2000 and 2007, as indicated in Figures 29 to 31. However, there was an increase in the headcount ratio between 2006 and 2007.

## 6. Inequality within the Province

### 6.1. Theory

Inequality is regularly measured with regards to income, and represents the distribution of income in a population or population sub-group. The poverty gap described in Section 6 is an example of such an inequality measure within a sub-group, in this case between the poor populations. There are various ways to measure income inequality, although most common is to provide summary statistics of the income distribution (Govender et al. 2007:127). Therefore the share of poorest 10% to the total population's income can be measured. Another measure is that of the Lorenz curve and Gini coefficient. The Lorenz curve plots the cumulative percentage of households against the cumulative percentage of incomes, creating a cumulative density function. The Gini coefficient ranges from 0 to 1, with 1 being perfectly unequal and 0 perfectly

equal. The Gini coefficient is derived from the Lorenz curve. The area between the Lorenz curve and the hypothetical perfect equality line divided by the area underneath the line reflects the Gini coefficient. Another measure is the Theil index which was developed by the econometrician Henri Theil, which can be written as follows:

$$T_T = \frac{1}{n} \sum_{i=1}^N \left( \frac{x_i}{\bar{x}} * \ln \frac{x_i}{\bar{x}} \right) \quad (7)$$

With  $x_i$  the income of the  $i$ th person,  $N$  the number of people and  $\bar{x} = \frac{1}{n} \sum_{i=1}^N x_i$  the mean income. The first part in the brackets can be seen as the individual's share of aggregate income, and the second part is the individual's income relative to the mean. The Theil index is equal to 0 if there is no income inequality (thus 50:50 distribution), equal to 0.5 if the distribution is 74:26, equal to 1 if it is distributed 82:18, equal to 2 if the distribution is 92:8, and 4 if it is distributed 98:2 (Wikipedia). Thus the higher the Theil, the skewer the income distribution.

## 6.2. Inequality measures from Labour Force Surveys

The following table represents the Gini and Theil inequality measurements by race for South Africa, Gauteng and the Gauteng agricultural households. Per capita household earnings are used as reference throughout this section:

**Table 13 : Gini and Theil measures of inequality for 2007**

	South Africa		Gauteng		Gauteng Agriculture	
	Gini	Theil	Gini	Theil	Gini	Theil
<b>African</b>	0.79	3.19	0.58	0.71	0.63	0.91
<b>Coloured</b>	0.55	0.56	0.46	0.39		
<b>Indian</b>	0.57	0.6	0.57	0.59		
<b>White</b>	0.47	0.4	0.46	0.37	0.51	0.51
<b>Total</b>	0.75	2.25	0.62	0.75	0.70	1.05

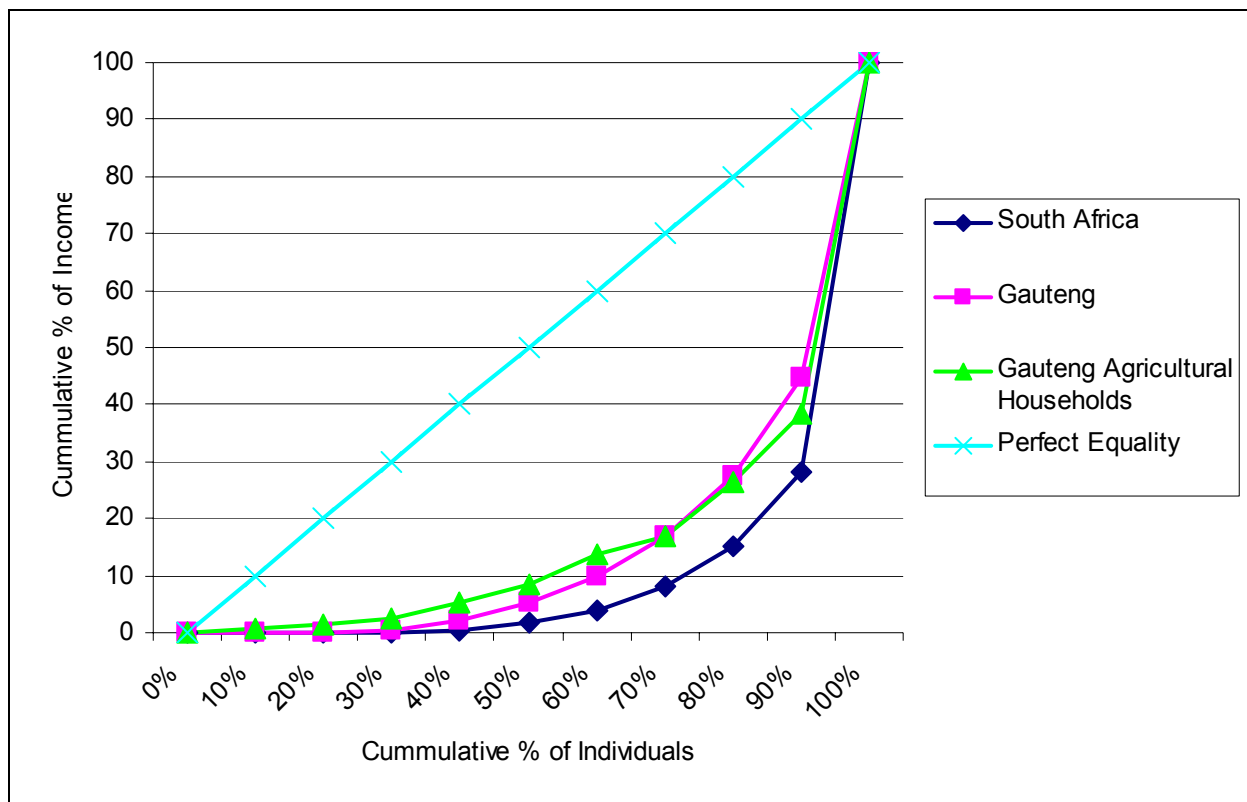
Source: Own calculation from Labour Force Survey 2007

In Table 13, the African population with a Gini of 0.79 and Theil of 3.19 have the highest inequality in South Africa. The lowest inequality is within the White population with 0.47 and 0.4 respectively, and the average for South Africa is 0.75 and 2.25. In Gauteng, the African households in general and the African agricultural households suffer most from inequality. What is interesting to note is the low inequality within race in the Gauteng agriculture households, but the total inequality is high. This indicates that between races inequality is high. Gauteng's average is also very high, signifying that there is high inequality within the province.

The Lorenz curve in Figure 31 indicates that income distribution in South Africa is more unequal than in Gauteng and amongst the Gauteng agricultural households. Thus between

Gauteng and the Gauteng agricultural households, there is no clear evidence of higher or lower inequality. It can be seen that 90% of individuals in Gauteng receive about 45% of the total income.

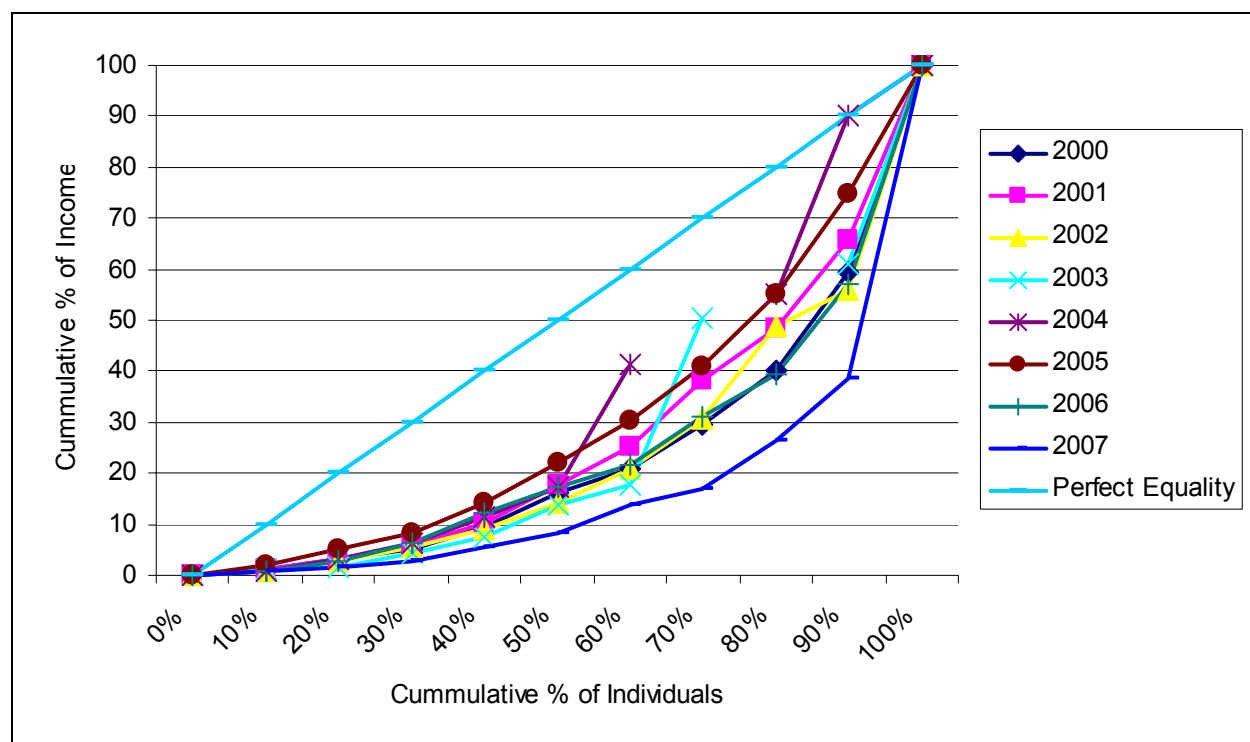
**Figure 31: Lorenz curve for individuals in South Africa, Gauteng and Gauteng agricultural households in 2007**



Source: Own calculation from Labour Force Survey 2007

The following 2 figures represent the Lorenz curve and Gini coefficients for the Gauteng agricultural households from 2000 till 2007. It can be observed in Figure 32 that inequality was the highest during 2007 and the lowest in 2005.



**Figure 32: Lorenz curve for Gauteng agricultural households by year**

Source: Own calculation from Labour Force Survey 2000-2007

The Gini coefficient in Figure 33 also shows a definite upward pattern for the total (from 0.56 in 2000 to 0.68 in 2007). The Africans' Gini coefficient increased from 0.51 to 0.63 from 2000 till 2007 while the Whites' Gini increased from 0 to 0.5 during the same period. The Gini coefficients of the Africans and Whites varied through time, e.g. the Africans' Gini decreased between 2000 and 2001 and again between 2003 and 2005. The Whites' Gini is very volatile, but this can be due to small sample size. The overall picture is that inequality has increased since 2005, which corresponds to the above figure of the Lorenz curves where there is a significant change in inequality.

**Figure 33: Gini coefficient for Gauteng agricultural households by year**

Source: Own calculation from Labour Force Survey 2000-2007

Inequality within the Gauteng agricultural work-force since 2000 has not decreased which indicates that there is still a large gap between the rich and poor within the sector.

## 7. Conclusion

The Gauteng agricultural sector is a player in the economy of Gauteng and therefore this paper analysed the trends associated with the sector with regards to demographics, poverty, income and inequality. The Labour Force Survey provided the necessary data to compute the required results, ranging from the year 2000 till 2007. The paper indicated that the African population is dominant in this sector for Gauteng and South Africa. The total number of individuals in respective economic segments, i.e. South Africa, Gauteng and Gauteng agriculture are also provided together with statistics such as age structures and employment figures.

The skills level of the agricultural sector is worrisome, and the impact of low skill levels reflects in the income profiles. Incomes are lower across the board except for those of the White population. Unemployment rates are being driven by the high unemployment within the African population in both South Africa and Gauteng. This reflects in the high share of the Africans in the total poverty rate throughout the country. Share of total poverty levels are extremely high amongst the Africans in the Gauteng agricultural sector, reflecting the need for poverty alleviation. Generally poverty levels have been decreasing during the past 7 years when

using the poverty line of R322 per capita per adult equivalent as measure, but there was an increase in the poverty headcount ratio between 2006 and 2007.

Income inequality paints a rather grim picture indicating that equality has not improved over the past seven years for the agricultural sector. The sector is also characterised by more between-race inequality and not so much by within-race inequality compared to the average for the country.

This report provides an in-depth look at the agricultural sector of Gauteng. Policy decisions and redistribution policies of provincial level need to take these data into account to promote the economic growth of Gauteng and also to enhance the living standard of the people of Gauteng.

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