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A comparison of the Commission for Employment Equity reports to Household Survey Data

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Abstract

The Commission for Employment Equity reports are an important source of data on changes in the South African labour market. A quantitative comparison of the Commission for Employment Equity (CEE) reports, which is based on a sample of responding firms, and the nationally representative household survey data in the Post-Apartheid Labour Market Series (PALMS) is undertaken in this paper. The comparison is motivated by low compliance rates with the Employment Equity Act and the changing sample of firms that are included in each CEE report. The comparison suggests that the CEE reports overstate the extent of demographic transformation in the workforce between 2002 and 2015. The discrepancies observed are partially explained by differences in the sample of firms in the CEE data over time. Differences in the meaning of the size of the firm in PALMS and the CEE are also part of the explanation. The findings in the paper have implications for the future use of CEE reports in analysis, for the CEE itself in improving employment equity data collection, and for future research aiming to assess workforce transformation in the South African labour force over time.

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1. Introduction

South Africa's Employment Equity Act (EEA) was introduced in an attempt to redress past inequality and an historical legacy of discrimination in the workplace (Horwitz and Jain, 2011). The Act, which prohibits unfair discrimination against black people[2], women, or employees with disability status has been described as the most comprehensive intervention in the South African labour market since the end of apartheid, and can be conceived of within the broader context of South Africa's Constitution which repeatedly endorses legislative prohibitions against unfair discrimination (Bezuidenhout *et al*., 2008; Horwitz and Jain, 2011). This research aims to evaluate the reliability of the Commission for Employment Equity's (CEE) reports as a source of widely used information on South Africa's post-apartheid demographic transformation in the workplace. This is undertaken through a comparison of the CEE reports and representative household survey data from Statistics South Africa that has been collated in the Post-Apartheid Labour Market Series (PALMS) dataset. In doing so, a clearer idea of the extent of demographic transformation[3] in the South African labour market amongst those employed, particularly in skilled work, will be ascertained. The usefulness of both data sources in understanding workforce transformation will also be explored.

The EEA requires employers of fifty or more employees[4] to submit employment equity plans outlining strategies detailing the recruitment, training, development and retention of black people, women, and people with disabilities[5], and a demographic profile of all employees (Employment Equity Act [EEA], 1998). The CEE collates these plans to produce an annual report on progress in employment equity in the workplace. A comparison of the CEE reports to the PALMS dataset is warranted by the potential selection bias that may result from both the EEA's reporting process and the reluctance of firms to comply with the Act, meaning that the sample of firms included in the CEE reports may not be representative of the population.

Low compliance rates have been a persistent feature of the EEA and its processes. Of the few cases of prosecution for noncompliance, all have been a result of employers' failure to submit employment equity plans (van Rensberg, 2017). The analysis of employment equity plans submitted is also based only on those that comply with the EEA's requirements, and thus each year a proportion of submitted, but inaccurate or incomplete plans are excluded from the analysed sample (Commission for Employment Equity [CEE], 2006). The Department of Labour's ability to accurately process and compile reports consistently is also considered to be limited (Bezuidenhout *et al.*, 2008). These shortcomings of the employment equity reporting process increase the likelihood of selection bias in the resulting sample of firms, making it difficult to determine whether the Department of Labour's CEE reports are a reliable source of information on post-apartheid demographic transformation in South African firms.

[2] Defined in the EEA as "a generic term which means Africans, Coloureds and Indians" (EEA, 1998)
[3] In terms of the extent to which the representation of African and female employees has increased.
[4] Collectively referred to as designated employers (EEA, 1998)
[5] Collectively referred to as designated groups (EEA, 1998)

Despite these limitations in the reporting process, the annual CEE reports are often used as the benchmark for measuring progress in employment equity in South Africa (Bezuidenhout *et al.*, 2008). There is no published research that has assessed possible mismeasurement in the Department of Labour's CEE reports. This is concerning, given the extent of coverage some of the more 'shock-factor' statistics from the annual CEE reports are given in the media. *City Press* opened an article titled "Employment equity: What's really going on?" with the sentence, "The odds are you will have a white boss for at least the next 20 years" – a statement based on findings from the 16th Annual CEE report (van Rensburg, 2016). The aim of this paper is not to dispute such statements, but rather to thoroughly investigate their validity and in doing so, contribute to a broader understanding of changes in the South African labour force during the post-apartheid period. The paper will also investigate how critically previous research has interpreted and used data from the CEE reports and labour force surveys.

Differences in the extent of demographic transformation shown in the CEE reports and the PALMS household survey data are expected because of the variation in the firms included in each CEE report. This paper will focus on identifying and discussing how extensive the differences between the household survey data and the CEE reports, based on the firms responding to the CEE reporting requirements, are. The comparison is thus undertaken by comparing a source of household survey data (PALMS) and an (aggregated) source of firm data.

The main finding is that by race, gender, public/private sector employment and across most occupational levels the overall trends in the CEE reports and PALMS data are similar. Both indicate that there has been limited demographic transformation by gender and race. Despite these similar trends overall, large discrepancies in proportion levels between CEE and PALMS data are observed at the three highest occupational levels, and the CEE reports show larger demographic changes in the workforce between 2002 and 2015.

What follows is a review of the use of the CEE reports and household survey data in the literature on workplace transformation in South Africa and the limitations of the employment equity reporting process. Section 3 describes the data and methodology used, and the sample in PALMS selected to ensure comparability with the theoretical sample frame of all firms with 50 or more employees supposedly represented in the CEE reports. In Section 4, a comparison of the target and sampled populations in the PALMS and CEE data is undertaken. Employee shares by race, gender, public/private sector employment and occupational level are compared and discussed, and comparisons by race and gender within each occupational level follow. Possible differences in the meaning of employer size in the CEE and PALMS data is addressed. Section 5 concludes and discusses suggestions for further research on the subject.

2. Reviewing the use of Cee Reports And Household Survey Data in the Literature on Demographic Transformation in the Post-Apartheid Work Force

A significant portion of the literature on employment equity and its progress refers to the Department of Labour's Commission for Employment Equity (CEE) reports. The literature either draws inference and conclusions from an analysis of the data presented in the reports, or it critiques the reliability and usefulness of the reports through comparisons of CEE data to household survey data (Horwitz and Jain, 2011; Thomas and Jain, 2004; Lee, 2015; Bezuidenhout *et al.*, 2008; Jain, Horwitz and Wilkin, 2012). Horwitz and Jain (2011), Thomas and Jain (2004) and Jain, Horwitz and Wilkin (2012) base their analysis on findings presented in the CEE reports without questioning their reliability, while Lee (2015) emphasises that his findings are corroborated by the CEE reports, but notes that the reports are potentially unreliable. Bezuidenhout *et al.* (2008) problematize drawing conclusions from the CEE reports over time by highlighting the unreliability of the data, and the lack of both a complete sample in each time period and a consistent sample over time. Thus, instead of drawing conclusions from the CEE reports to measure labour market changes over time, numerous authors – Lee and Bezuidenhout *et al.* included – base their research on household survey data. Neither of these two groups of researchers have conducted a thorough comparison of the CEE reports to representative household survey data to determine how substantially different the former are from the latter. They have also not done a long term comparison, using all the CEE and household survey data. This research thus aims to fill these gaps in the literature by undertaking the comparison of CEE report data and PALMS household survey data over the period 2002-2017.

2.1 Measuring progress in Employment Equity using household survey data

A review of the literature that makes use of labour force household survey data[6] indicates a lack of significant progress resulting from the attempted implementation of Employment Equity policies. Burger and Jafta (2006) find that differences in overall employment, occupational attainment and wages across race groups have not declined between 1995 and 2004, but note that the black white wage gap has narrowed slightly at the top end of the wage distribution, indicating that employment equity policies may be benefiting a high-earning minority.

In terms of employment, Burger and Jafta (2010) find significant race and gender-related disparities in unemployment and employment rates. Africans and women face the highest unemployment rate despite the fact that this gap decreased slightly between 1997 and 2006. More recent research by Fredericks and Yu (2017) confirms that the labour force participation rate is lowest for Africans and highest for whites, while the probability of being employed is highest for whites, always higher for men when compared to women, and has remained stable between 2009 and 2015 for Africans. The male-female probability of employment gap has halved over the period in consideration (Fredericks and Yu, 2017).

[6] The October Household Surveys (1994-1999), the Labour Force Surveys (2000-2007) and the Quarterly Labour Force Surveys (2008-2017)

Using probit regressions and an Oaxaca-Blinder decomposition, Fredericks and Yu (2017) find that females' probability of finding employment in highly skilled occupations increased relative to to their male counterparts between 1997 and 2015. The authors argue that this increase is associated with higher levels of educational attainment and thus a stronger endowment of characteristics amongst women. Burger and Jafta (2010) however find that a smaller proportion of African and coloured women are employed in highly skilled work in 2006 than in 1997, while white women see an increase in the proportion of those in highly skilled employment over this time. Bezuidenhout *et al.* (2008) confirm that African women are least represented in high skill sectors in 2007. The increase in the probability of finding employment in high-skilled occupations amongst females observed by Fredericks and Yu (2017) is attributed to the experience of white female employees.

Fredericks and Yu (2017) find that the occupational attainment gap – measured as the likelihood that a formal sector employee is involved in a highly-skilled occupation – between white and African workers has increased between 1997 and 2015. Part of this increase is attributed to increases in the unexplained component, suggesting that some of the divergence over time has been caused by increased discrimination. This supports the argument that employment equity policies have failed to bring about meaningful change in South Africa's labour market. In summation, the literature using labour force surveys conducted over the past two decades concludes that there has not been much progress in increasing the participation and earnings of black and female South Africans (Burger and Jafta, 2010; Bezuidenhout *et al.*, 2008).

2.2 The use of CEE reports in determining the extent of transformation in the workplace

Horwitz and Jain (2011) and Jain, Horwitz and Wilkin (2012) base their analyses on the Department of Labour's CEE reports and find similar trends to those in the labour force surveys. Horwitz and Jain (2011) find that while the proportion of African employees in top management positions increased between 2001 and 2010 and decreased for white employees, the proportion of white employees is still double that of African employees. Similarly, Jain, Horwitz and Wilkin (2012) find an upward trend of African, coloured and Indian representation in upper management positions, while overall representation of these race groups in employment is still significantly lower than their respective proportions in the labour force. These findings confirm those of Fredericks and Yu (2017) previously discussed.

Instead of relying solely on the CEE reports to document changes in the labour force over time, Thomas and Jain (2004) conduct research using both household survey data and the data contained in the CEE reports. The authors conduct a limited comparison of the first CEE report and the 1999 October Household Survey (OHS) and conclude that black employees are primarily employed in elementary occupations. The authors go on to discuss representation of designated groups at all occupational levels also using data taken from the first CEE report (Thomas and Jain, 2004). Based on this, the authors find that black people, women and people with disabilities are not highly represented in top management positions (Thomas and Jain, 2004). The authors note that the first CEE report was based on information from 8250 employers employing just over 3 million

employees – a small proportion of total employment at the time. The authors also discuss low compliance with the Act, low fines for noncompliance and the high number of inaccurate employment equity plans that were excluded in the analysis from the first CEE report (Thomas and Jain, 2004). The authors do not, however, explicitly question the reliability of the CEE data based on the comparison with the 1999 OHS data and this supports the need for a closer comparison of the CEE reports with a data source that is representative of the labour market.

Bezuidenhout *et al.* (2008) argue that the CEE reports cannot inform conclusions about transformation in the labour market, and base this assertion partly on the fact that the employees in the firms used in the annual reports only account for a small percentage of the economically active population (EAP) (Bezuidenhout *et al.*, 2008). The EAP includes those who are employed and the unemployed who are seeking employment, meaning that the authors used an incorrect benchmark with which to compare the number of employees in the CEE reports to the household surveys. Bezuidenhout *et al.* (2008) conclude, with only limited analysis, that the data contained in the CEE reports are not representative of the national labour market.

The analysis conducted by Bezuidenhout *et al.* (2008) includes a comparison of the 6th CEE Report and data from the September 2005 Labour Force Survey. When looking at the population of black legislators, senior officials and managers, professionals, and technicians and associate professionals, the 6th CEE Report is shown to underestimate the first two categories by roughly 5%, and the third by nearly 15% (Bezuidenhout *et al.*, 2008). While these are substantial differences, it is unlikely that the authors limited their sample to only those employers that were required to submit reports in 2005, as only firms with 150 or more employees were required to submit reports in 2005 (CEE, 2005), and the LFS firm size question only included a more than 50 category. This is an important concern, to which we return below.

The various shortcomings of the Department of Labour's employment equity processes, including the submission and analysis of employment equity plans are discussed at length in the paper by Bezuidenhout *et al.* and serve as reason to believe that the data contained in the CEE reports are unreliable. However, the limited comparison conducted by the authors provides no solid base from which to conclude that the trends presented in CEE reports are wholly different from those indicated by labour force survey data. There is a clear need for a thorough comparison of CEE data and household survey data that is representative of the national labour market, which is undertaken in Section 4 of this paper.

2.3 Limitations of the employment equity reporting process and errors in the CEE reports

In their discussion of the shortcomings of the Department of Labour's employment equity processes, Bezuidenhout *et al.* (2008) address the low level of compliance with the reporting process and the potential effect of this on the representivity of the data in the CEE reports. Such a low level of compliance with the reporting process has persisted in part due to the inability of government to impose the fines outlined in the

EEA for noncompliance. Since the EEA came into force there have been close to no prosecutions and fines implemented for noncompliance, and there are only two well-known cases where fines were actually imposed on noncomplying businesses (van Rensberg, 2016).

The original EEA that was in force from 1998 to 2013 details maximum fines that may be imposed on firms that do not comply with certain provisions of the Act, including the section requiring the submission of employment equity plans (EEA, 1998). These fines remain constant over time, and are small in comparison with the turnover of large companies. The amended Act which came into force in 2014 has however revised these fines. The previous fines have increased threefold, and an alternative to these absolute fines, based on a percentage of the non-complying employer's turnover, has been introduced – the larger of the two is imposed on a non-complying firm (Employment Equity Amendment Act, 2013).

Added to low compliance and the poor implementation of fines is the limited capacity of the Department of Labour to accurately and consistently process submitted reports. Bezuidenhout *et al.* (2008) find that often employment equity plans submitted by firms are not reflected in the Employment Equity Registry, but that these same firms have been able to produce the supposedly missing reports. Before 2014, the Department of Labour also excluded a proportion of submitted but inaccurate employment equity plans from the analysis in the CEE reports[7]. The Commission itself acknowledges that the exclusion of these plans will distort interpretations of the CEE data on representation in the work force (CEE, 2005).

It is likely that limited compliance amongst firms and processing capacity of the Department of Labour manifest in selection bias and resulting errors in CEE report data. There is thus a need for a thorough comparison of this data to nationally representative household survey data which has the same sampled population over time. It is clear though that the household survey data has its own set of measurement issues (Kerr and Wittenberg, 2019a), and this includes the reliability of the firm size question that is used below to make the household survey data more comparable to the CEE firm data. This paper aims to improve on previous literature that has used CEE data and questioned its reliability by conducting an in-depth comparison with representative household survey data that is necessary to accurately conclude how reliable the CEE reports are.

3. Methodology and Data

The post-Apartheid Labour Market Series (PALMS) is a stacked cross sectional dataset which contains micro-data from household surveys conducted by Statistics South Africa and SALDRU. These surveys are the 1993 PSLSD, the October Household Surveys (OHS) from 1994-1999, Labour Force Surveys (LFS) from 2000-2007 and the Quarterly Labour Force Surveys (QLFS) from 2008-2019 (Kerr and Wittenberg, 2019b). To correct for

[7] See Table 6 in Appendix A.

changes in demographic models of the population over time, the cross-entropy weight from PALMS has been used (Kerr and Wittenberg, 2019b). The PALMS data is a collection of representative samples of the population over the post-Apartheid period, and it is therefore appropriate to use PALMS as a benchmark against which to compare the findings presented in the Department of Labour's CEE reports. PALMS does not include data on disability status and so the CEE reports and PALMS are not compared on workforce transformation in terms of disability status and employment.

Before the EEA was amended in 2014, the reporting requirements for small and large employers differed. According to the EEA, small employers are designated employers who employ more than 50 but fewer than 150 employees, while large employers are designated employers who employ 150 or more employees (EEA, 1998). Before 2014 small employers were required to submit employment equity plans in every year ending with an even number, and thus every second year, while large employers were required to submit employment equity plans annually (Department of Labour, 2008). The Act was then amended in 2014 so that both small and large employers are now required to submit plans annually (Employment Equity Amendment Act, 2013).

The household surveys used in PALMS contain a categorical question recording the number of workers at a respondent's place of work (Kerr and Wittenberg, 2019b). This measure of firm size is crucial to ensure that the sample is restricted appropriately when comparing PALMS data to the CEE, because of differences in CEE reporting requirements for small and large employers. However, the PALMS variable's largest category is "50 or more" workers and thus the sample cannot be adjusted to include only large or small employers. For this reason, the analysis and comparison of PALMS and CEE data will be restricted to CEE reports published in even years between 2000 and 2016, but including 2015, given that the amended Act requires both small and large firms to report every year from 2014 onwards. For these years, the CEE reports and the sample used in the PALMS data should have equivalent and therefore comparable populations. However, as discussed below, there are likely to be differences in the meaning of firm size as reported by workers in a household survey and the firm size of the firms included in the CEE report.

Employers of less than 50 employees are not required to submit reports, however exception is made for firms that employ less than 50 employees and have an annual turnover greater than or equal to specified amounts for each sector (EEA, 1998). Employees working for such firms cannot be distinguished in the PALMS dataset, and so there is slight room for inaccuracy in the comparison given this potential discrepancy in sample sizes. However, given that the number of firms to which this applies is likely to be small, this should not impact the accuracy of the comparison to a large degree.

Self-employed individuals are excluded from the analysis to ensure that the sample used in PALMS reflects the employees represented in the CEE reports. The exclusion of employees in firms with less than 50 workers also ensures that almost all informal sector employees are excluded in the analysis.

In sum, different reporting requirements for small (50-150 employees) and large (150+ employees) firms included in the CEE reports necessitates restricting the sample in PALMS by firm size. However, the firm size variable in PALMS does not allow for distinguishing between small and large firms as defined in the EEA, and so the analysis that follows includes only those years in which both large and small firms were required to submit reports.

4. Comparison Of Cee And Palms Data

4.1 CEE sample sizes and PALMS data limitations

Having outlined the household survey data in PALMS and how the data can be used in a comparison with the CEE reports, this section discusses the number of reporting firms for the CEE sample over time. The number of employees in these firms is compared to employment totals estimated from PALMS. Each of these can be used to gauge the reliability and consistency of the CEE report data over time, which will be useful in explaining any differences between the two sources of information discussed below.

Table 1: Reporting trends, employee sample sizes and average firm size in the CEE reports and PALMS
Sources: CEE Reports and PALMS (2019).

CEE report number	Year	No. of employers[8]	No. of employees in CEE analysis	Average firm size in CEE	No. of employees in firms of size 50+ in PALMS	% of PALMS employees accounted for in CEE reports
1	2000	8250	3 336 784	404	2 971 743	112.28%
3	2002	6990	2 303 713	330	3 372 990	68.30%
5	2004	5554	2 211 937	398	3 313 135	66.76%
7	2006	4394	1 486 041	338	3 856 733	38.53%
9	2008	7229	2 977 862	412	4 132 123	72.07%
11	2010	16 698	4 678 564	280	4 329 070	108.07%
13	2012	22 012	5 414 491	246	4 681 951	115.65%
15	2014	24 291	6 186 875	255	5 187 960	119.25%
16	2015	25 030	6 334 597	253	5 058 615	125.22%
17	2016	26 255	7 071 449	269	5 081 047	139.17%
18	2017	27 163	7 299 428	269	5 308 910	137.49%
19	2018	27 485	7 415 876	270	5 293 609	140.09%

Table 1 shows that the number of employees in the firms included in each CEE report and the (weighted) number of employees in the PALMS data differs quite substantially; the CEE reports seem to have included both more and fewer employees than the PALMS data across different years. There are also large changes in the number of firms included in the CEE reports. The number of reporting firms nearly halves between 2000 and 2006, and then increases by more than a factor of 6 between 2006 and 2018. The average firm size

[8] This corresponds to the number of employment equity plans submitted by firms to the Department of Labour that were deemed usable (see discussion above).

(calculated by dividing the total number of employees in the CEE analysis by the number of firms in the CEE analysis) shrank somewhat between 2000 and 2006, jumped up by 25% in 2008 and then shrank again by a third, after which it was roughly constant.

Between 2008 and 2010 the number of reporting firms more than doubled. This increase may be partly attributed to the amendments made to employment equity regulations in 2009, which aimed to increase the ease of online reporting (CEE, 2009). This is supported by the changes in average firm size. The substantial decrease in average firm size from 2008 to 2010 suggests that smaller firms – likely those with between 50 and 150 employees – began submitting employment equity plans to the Department of Labour.

The number of employees in the firms included in each CEE report more than halves between 2000 and 2006 and then increases by more than a factor of five between 2006 and 2018. The CEE reports indicate that the number of employees increased by 122% between 2000 and 2018. This contrasts with the trend in total employees from the PALMS data, which shows that the employee population of those working in firms with 50 or more employees has increased by 78% between 2000 and 2018.

The final column of Table 1 shows the ratio of CEE employees relative to the employee totals in PALMS. These reflect the fluctuations over time in CEE employee data, showing a decline to roughly 39% in 2006 and a substantial increase after this. After 2008, the percentages calculated indicate that the CEE reports account for over 100% of the employees who work in firms with fifty or more employees as measured in PALMS.

A potential explanation for the strange differences in the trends in the number of employees between the CEE and PALMS arises from differences in the definition of a firm in the CEE and PALMS. The LFS question on an employee's firm size asked for the number of regular employees at the individual's "organisation/business/enterprise/branch" (Statistics South Africa, 2005). The QLFS question asked about the number of employees at the individual's place of work (Statistics South Africa, 2010). Respondents to these surveys may have thought of the number of employees at their place of work as based on the number of employees at their establishment or immediate work environment, and not the number of employees at the enterprise that would be reporting that same individual as working for the enterprise.

Employers submitting employment equity reports to the CEE on behalf of their employees are PAYE registered entities according to the Department of Labour's EEA2 form (Department of Labour, 2019). However, if the company that the employer works for is part of a group of companies, the option of submitting either a consolidated report or individual workplace reports is given (Department of Labour, 2015). This means that the unit reporting to the CEE is likely an enterprise, but could be an establishment if a company chooses to submit workplace reports.

Despite the slight inaccuracy in comparison that this may introduce, household survey respondents may have been systematically underreporting the number of employees at the enterprise that reported the respondent as an employee. The legitimacy of this claim is supported by a comparison of PALMS data to research on weighted shares of employment using the nationally representative Quarterly Employment Statistics survey (QES), undertaken by Stats SA. This survey is more reliable than the CEE firm data, since the response rates are much higher, and non-response adjustments are undertaken (Kerr et al (2014)). Kerr *et al.* (2014) used the QES and showed that between 2005 and 2011, 68% of total employment in VAT registered firms in the private sector, excluding agricultural and mining work, was in firms with more than 50 employees. Over the same period, the PALMS household survey data indicates that 40% of respondents reported as working for firms with more than 50 employees in formal private sector employment excluding agricultural and mining work. This means that, if the total of private formal sector employees excluding agriculture in PALMS and the QES are the same, around 41%[9] of these employees in PALMS gave a firm size of less than 50, when they would have been classified as working in a firm of size 50+ in the QES. This result supports the claim that there is an important difference in what employees think of as firms in the PALMS household surveys and the firms that are included in the CEE reports, and further complicates comparisons between the two sources of data.

Any comparisons are further complicated because the definition of a formal sector worker in the household surveys contained in PALMS changes over time. The LFS is also the only survey that has a question on VAT registration of the firm an employee worked for. Table 2 shows the share of formal sector worker in firms of more than 50 employees for multiple years of the household survey data, both including and excluding agricultural and mining work.

[9] (68%-40%)/68%

Table 2: Percentage of formal private sector employees in firms with more than 50 employees in PALMS

Year	Percentage of formal private sector employees in firms of size 50+, excluding agricultural and mining workers	Percentage of formal private sector employees in firms of size 50+, including agricultural and mining workers
2000	37.44%	37.44%
2002	42.11%	42.11%
2004	38.61%	39.26%
2006	40.55%	41.28%
2008	34.64%	35.79%
2010	43.93%	45.30%
2012	42.72%	43.97%
2014	44.39%	45.51%
2015	46.96%	48.21%
2016	44.33%	45.86%
2017	46.00%	47.32%
2018	46.41%	47.80%
2019	45.21%	46.60%

Source: PALMS (2019).

Table 2 indicates that the share of employees in the household surveys reporting working in formal firms of size 50 or more does vary. The decrease in 2008 and subsequent increase to around 45% can perhaps be attributed to the change in the methodology used to determine the formal/informal status of employees between the LFS and QLFS (Yu, 2009). A direct question on formal/informal employment status was dropped from the 2009 third quarter QLFS. The QLFS has since included a derived formal/informal employment status based on other questions in the survey (Kerr and Wittenberg, 2019b). Informal employment is defined in broader terms in the QLFS than in the LFS, which explains the relatively lower percentages observed from 2010 onwards[10].

The discussion above shows that there are several obstacles to making comparisons between the CEE and PALMS data. Despite this, and keeping in mind the difficulties, a comparison of the trends in both the CEE and PALMS data by race, gender, public/private sector employment and occupational level follows.

4.2 Overall trends by race, gender, public/private sector employment and occupational level in PALMS and the CEE reports

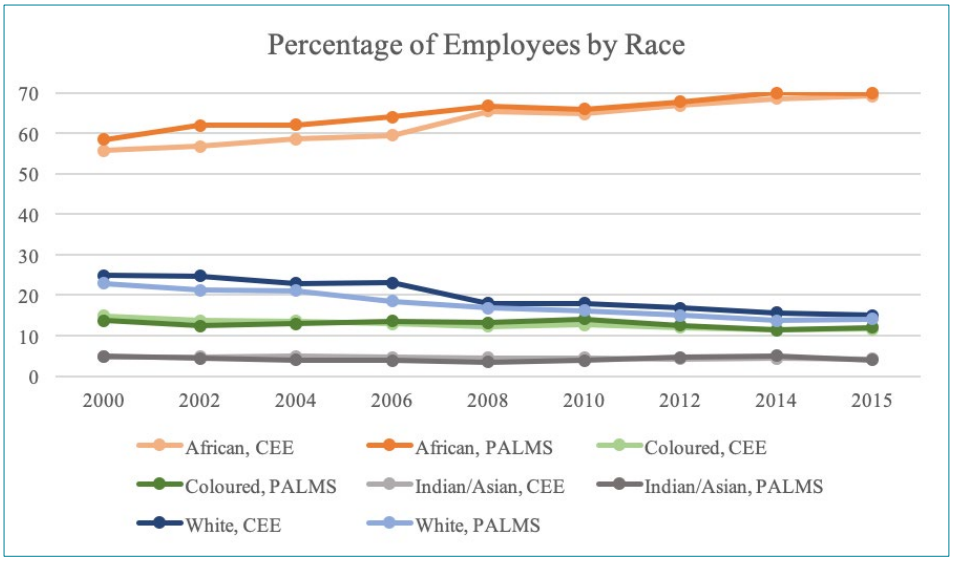
PALMS household survey data and CEE report data are compared for those working in firms with more than 50 employees, by race, gender and public/private sector employment. One further caveat in comparing the two sources of data is the PALMS is a survey. This means there is uncertainty about the true numbers and proportions below. This is especially important in very small proportions or in comparing statistics with very

[10] The LFS defines the informal sector as consisting of businesses that are not registered in any way (Statistics SA, 2005), while the QLFS classifies informal employment based on all those working in the informal sector, i.e. working for an unregistered business, persons performing unpaid work, as well as formal sector employees who do not receive employee benefits such as a pension or medical aid, and who do not have a written contract of employment (Statistics SA, 2008).

few individuals in the sample included in the group. We have not included standard errors or confidence intervals in the figures below, but they are included in the Appendix tables.

Figure 1 shows the percentage of employees working for firms with 50 or more employees by race represented in PALMS data and the CEE reports[11]. Both sources of data indicate that the percentage of African employees has increased and the percentage of white employees has decreased over time, while the percentage of Indian/Asian and Coloured employees has remained constant. Differences in percentage levels between CEE and PALMS data are present up to 2008, however these are small in comparison to the differences between CEE and PALMS data by total employee count and proportion shown in Table 1.

Figure 1: Percentage of 50+ firm employees by race in the CEE reports and PALMS

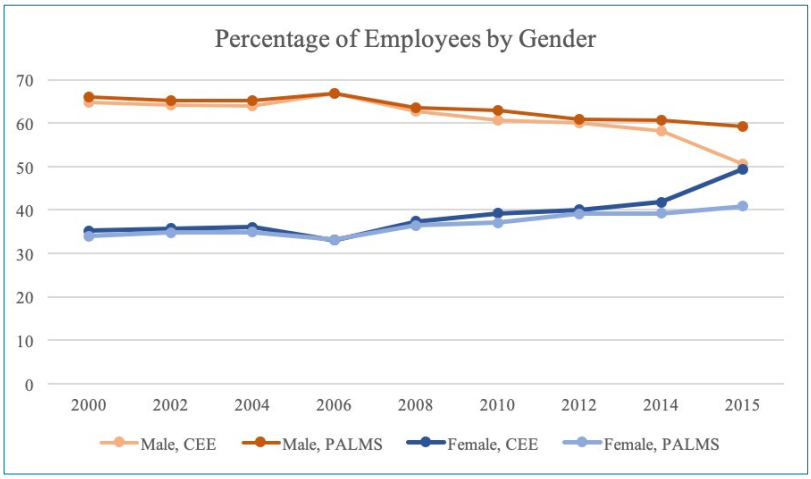


Source: Own calculations using PALMS (2019) and figures from CEE reports.

Figure 2 shows that, by gender, the percentage of male employees has decreased over time, with the CEE data showing a greater decrease in recent years, and the percentage of female employees has increased similarly[12]. Small differences between CEE and PALMS data are observed up to 2015 but in 2015 the percentage of male employees in the CEE data drops by 8 percentage points, such that the percentage of male and female employees is close to equal.

[11] See Table 7 in Appendix A for proportions.
[12] See Table 8 in Appendix A for proportions.

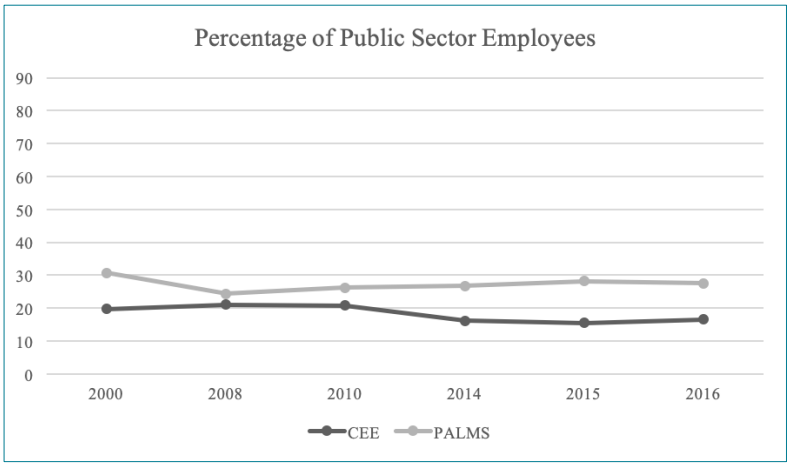
Figure 2: Percentage of 50+ firm employees by gender in the CEE reports and PALMS



Source: Own calculations using PALMS (2019) and figures from CEE reports.

Larger discrepancies between CEE and PALMS data are observed by public sector employment shown in Figure 3 and both sources of data indicate that the percentage has remained roughly constant over time[13]. The CEE underestimates the percentage of public sector employees in comparison with PALMS estimates, which suggests that there is greater noncompliance in submitting employment equity plans for public sector employers than for private sector employers. While perhaps counterintuitive, this is supported by Bezuidenhout *et al.* (2008) who observe that numerous public sector employers[14] failed to submit employment equity plans in 2005.

Figure 3: Percentage of 50+ firm employees for public sector employment in the CEE reports and PALMS



Source: Own calculations using PALMS (2019) and figures from CEE reports.

[13] See Table 9 in Appendix A for proportions.

[14] Municipalities, provincial and national government departments, the director of public prosecutions and the South African parliament itself were recorded to not have submitted employment equity plans in 2005 (Bezuidenhout *et al.*, 2008).

The substantial differences observed between the PALMS and CEE data in Figure 3 could be explained by the percentage of respondents who reported that they both worked in the public sector and worked for a firm with less than 50 employees; indeed 50.15% of respondents reported as such between 2000 and 2016. It is uncontroversial to assume that all workers employed in the public sector are employed by "firms" with 50 or more employees, given the large nature of public sector institutions and government bureaucracies in South Africa. The differences presented in Figure 3 are thus likely overstated and predominantly a result of respondents misunderstanding the employee count question in PALMS surveys.

The next aspect of comparison uses the CEE reports and the PALMS data to assess demographic changes by occupation. Occupation categories in PALMS have been recoded so that the categories approximate those in the CEE data, and are shown in Table 3.

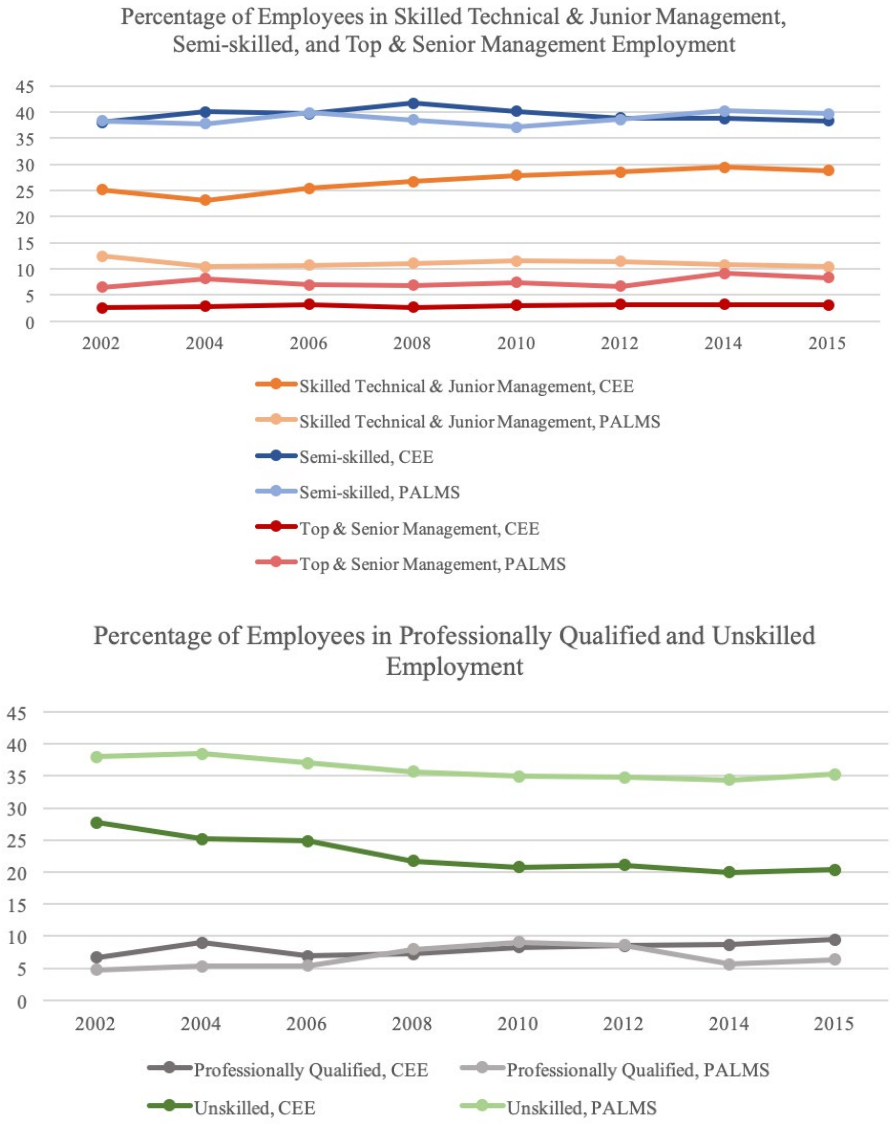
Table 3: Occupational levels in CEE Reports and Occupational categories in PALMS

CEE Reports: Occupational Level	PALMS: Occupational Category
Top Management Senior Management	Legislators, senior officials and managers
Professionally qualified and experienced specialists and mid-Management	Professionals
Skilled technical and academically qualified workers, junior Management, supervisors, foremen and superintendents	Technical and associate professionals
Semi-skilled and discretionary decision making	Clerks Service workers and shop and market sales workers Skilled agricultural and fishery workers Craft and related trades workers
Unskilled and defined decision making	Plant and machine operators and assemblers Elementary occupation Domestic workers

Sources: CEE Reports and PALMS (2019)

Figure 4 shows the percentage of employees by occupational level. For most occupational levels percentages from CEE and PALMS data remain relatively consistent over time. There is a slight decline in Unskilled employees which is more pronounced in the CEE data, and while the percentage of Skilled Technical and Junior Management employees remains stable in the PALMS data, an increase of just over 3 percentage points is observed for the CEE data. Substantial differences between PALMS and CEE data are present for the Skilled Technical and Junior Management and Unskilled occupational levels. Discrepancies are marked but not as large at the Top and Senior Management level, and percentages for Professionally Qualified and Semi-skilled employees are similar.

Figure 4: Percentage of 50+ firm employees by Occupational Level in CEE Reports and PALMS



Source: Own calculations using PALMS (2019) and figures from CEE reports.

The percentages calculated for Top and Senior Management and Skilled Technical and Junior Management are based on relatively small sample sizes shown in Table 4. The small sample sizes may contribute to the discrepancies between PALMS and CEE data observed for these occupational levels.

Table 4: Sample sizes for Top & Senior Management and Unskilled occupational levels in PALMS

	2000	2002	2004	2006	2008	2010	2012	2014	2015
Top and Senior Management	242	352	312	253	390	386	401	482	396
Skilled Technical and Junior Management	640	768	552	574	702	684	701	687	581
Unskilled	2809	2922	2736	2884	2379	2097	2328	2432	2105

Source: Own calculations using PALMS (2019).

Samples for the Unskilled level are still relatively large however. At this occupational level, a combination of the CEE reports underestimating the proportion of unskilled employees over time and misinterpretation of the employee count question in PALMS data may contribute to the substantial differences observed. The differences may also be partially attributed to category mismatch between the CEE and PALMS data. Despite the limitations with both sources of data, comparison within each occupational level follows to gain a better understanding of the overall trends discussed in this section.

4.3 The extent of transformation within occupational levels

The analysis that follows aims to determine whether the overall trends presented by PALMS and CEE data at each occupational level present similar findings regarding workforce transformation. Table 10 in Appendix A presents the proportions of employees in firms with 50 or more workers by race and gender at each occupational level from 2002 to 2015. Discrepancies between the CEE data and PALMS by race[15] and gender within occupational levels are substantially larger than the overall differences by race and gender. Sample sizes for certain occupational levels are even smaller when disaggregated by race and gender, which means that PALMS estimates may be particularly unreliable at this level of analysis, and this may contribute to the large differences observed. However, none of the standard errors for the proportion estimates shown in Table 10 are particularly large. Table 11 and 12 in Appendix A report sample sizes for the first three occupational categories by race and gender respectively.

At the highest three occupational levels disaggregated by race, PALMS data indicates both a smaller increase in African employees and a smaller decrease in White employees over time, compared to CEE data[16]. There are differences in the extent of the large discrepancies observed at the three highest occupational levels and disaggregated by race, as well as the trends observed in CEE and PALMS data. At the Top and Senior Management level PALMS data indicates limited transformation by race which contrasts to the steady trend presented by CEE data. At the Professionally Qualified level PALMS data presents a steady trend and CEE data

[15] Discrepancies between the data are marginal for Coloured and Indian/Asian employees and so focus will be placed on a comparison for the African and White population groups.
[16] See Figures 5.1 – 5.3 in Appendix B.

shows a large increase in the percentage of white employees and decrease in the percentage of African employees in 2006. Differences between CEE and PALMS data at the Skilled Technical level are pronounced in early years but are almost eliminated by 2015. At all three occupational levels, trends presented by PALMS and CEE data indicate a slow pace of transformation.

Changes in the percentage of employees by gender are much smaller than by race for both CEE and PALMS data at the three highest occupational levels[17]. At the Top and Senior Management level percentages remain stable according to CEE data, while PALMS data indicates a slight decrease in the percentage of male employees and a slight corresponding increase in female employees. The high percentage of male employees and low percentage of female employees that persists over the entire period in both the CEE and PALMS data indicates that very little transformation has taken place by gender at this occupational level. Percentages at the Professionally Qualified level indicate that there has been a slight decrease in male employees and a slight increase in female employees, although large differences in percentage levels in 2004 and 2008 interrupt this general trend. The Skilled Technical occupational level also shows a small decrease in the percentage of male employees and a small increase in the percentage of female employees for both CEE and PALMS data, however at this occupational level consistent differences in percentage levels between CEE and PALMS data are observed.

Sample sizes become very small when disaggregating by both race and gender simultaneously and thus analysis at this level is of limited use. However, for the sake of a complete comparison, and acknowledging that transformation by both race and gender is often the focus of media attention and public interest, Figures 7.1 – 7.3 in Appendix B present percentages for CEE and PALMS data by gender and race at the top three occupational levels.

These Figures show that at the Top and Senior Management level, the CEE and PALMS data show that the percentage of African and white female employees has increased very marginally from a low base, while the percentage of white male employees has decreased and the percentage of African male employees has increased very slightly. Differences between the CEE and PALMS data are substantial for male and female African employees at this level, considering that the changes occur from such a low base. The CEE data is between 30% and 60% lower than the PALMS data for African male employees between 2002 and 2015, and is more than 50% lower than PALMS data for African female employees across these years. Large differences between the data are also observed for white male employees with the CEE data being between 20% and 40% higher than the PALMS data.

[17] See Figures 6.1 – 6.3 in Appendix B.

There are inconsistent differences in percentage levels for PALMS and CEE data at the Professionally Qualified level, but overall trends are relatively similar and show a decrease in the percentage of white male employees, an increase in the percentage of African female employees, and a slight increase in the percentage of African male employees, while the percentage of white female employees has stayed roughly constant. The largest differences observed at this occupational level occur for female African employees in years 2002 where the CEE data is roughly 75% lower than the PALMS data, and 2008 where the CEE data is roughly 39% lower than the PALMS data.

At the Skilled Technical occupational level, a downward trend is observed for white male and female employees, and an upward trend for African male and female employees. Differences are substantial in early years for female African employees with CEE data being between 38% and 52% lower than PALMS data.

4.4. Discussion on overall trends, discrepancies and the extent of transformation in the CEE and PALMS data

While the trends in PALMS and CEE data are largely consistent, the extent of transformation differs according to PALMS and CEE data due to the differences in percentage levels observed. Compared to PALMS data, CEE data generally estimates larger changes in the extent of transformation[18] that has occurred over time in terms of gender and race.

Percentages of employees by race and gender presented by PALMS data show less change over time compared to changes indicated by CEE data, across all occupational levels for almost every comparison. The changes in PALMS are smaller as they progress from a higher base for African and female employees, and a lower base for white and male employees in most cases. This is clearly indicated in a comparison of percentage point changes between 2002 and 2015 for PALMS and CEE data presented in Table 5. PALMS data show smaller percentage point changes in their absolute value for fourteen out of the twenty race and gender categories at the five occupational levels. Four of the twenty demographic categories presented in Table 4 also indicate percentage point changes in opposite directions for PALMS and CEE data. This highlights instances where conflicting trends are presented by the two sources of data.

[18] The extent to which the share of African and female employees has increased.

Table 5: Percentage point changes between 2002 and 2015 for 50+ firm employees by occupational level, race and gender for PALMS and CEE data

		Male		Female	
		African	White	African	White
Top & Senior Management					
	CEE	4.88	-18.11	4.37	2.49
	PALMS	-1.67	-7.35	6.74	-3.39
Professionally Qualified					
	CEE	9.00	-24.37	17.21	-5.01
	PALMS	10.18	-12.04	-0.59	0.96
Skilled Technical					
	CEE	12.39	-11.99	11.6	-8.71
	PALMS	4.73	-9.76	12.23	-6.94
Semi-skilled					
	CEE	0.63	-4.01	15.29	-6.24
	PALMS	0.60	-6.33	11.49	-5.09
Unskilled					
	CEE	-8.63	-0.53	10.87	-0.50
	PALMS	-4.03	-1.37	8.60	-0.36

Source: Own calculations using figures from CEE reports and PALMS (2019).

More generally, the comparisons undertaken indicate that overall trends presented by the CEE reports and PALMS data are similar, with the exception of a few demographic categories where conflicting trends are presented, and they indicate that demographic changes by race and gender have been fairly slow. Large differences in levels between CEE and PALMS data are observed, particularly at the three highest occupational levels, though the sample sizes in PALMS are often quite small. The CEE reports consistently underestimate the proportion of African and female employees and overestimate the proportion of White and male employees, relative to PALMS.

The large differences between CEE and PALMS data observed, particularly at each occupational level and disaggregated by race and gender, are likely due to a combination of the small sample sizes used to calculate the PALMS proportions, making these estimates somewhat unreliable, respondents misunderstanding the employee count question asked in PALMS household surveys, and legitimate differences in proportion levels that exist between PALMS and CEE data. The former two limitations make it difficult to identify the extent to which the latter persists.

5. Conclusion

This paper has compared the Department of Labour's Commission for Employment Equity report data and representative household survey data from the Post-Apartheid Labour Market Series. Both sources of data show similar slow changes in workplace transformation, although the levels are very different.

The paper has also shown that both sources of data have important limitations. The main CEE data limitation is that the firms that responded in each year of the CEE have changed dramatically between 2000 and 2018, as shown by the shifts in firm size and the number of employees in the firms that report in each year. This means that it is difficult to say whether the trends observed in the data are real, or due to changes in which firms are responding.

The household survey data in PALMS is nationally representative, and had the same target population and similar response rates over the period under investigation. Thus in theory it can give a more accurate picture in the broad trends in workplace transformation over time, and we would recommend that this source of data is used in any analysis that examines the demographic transformation of employment in South Africa. However, we do not recommend that researchers use the surveys to examine transformation in very specific subgroups, because the sample sizes become very small.

There are two problems in PALMS when using the PALMS data to compare to the CEE. The first is that individuals responding to the question on firm size likely gave the size of the establishment (the place they work at), whereas the firms that report to CEE are likely enterprises (entities possibly incorporating many establishments). We provided evidence for this by showing that PALMS underestimates the share of formal workers in firms with 50+ employees, relative to the nationally representative QES firm survey conducted by Stats SA. Thus, limiting the PALMS sample to workers reporting working in a firm with more than 50 employees does not produce a sample comparable to the CEE sample (abstracting from the issue that the CEE does not get a 100% response rate from the 50+ firms).

To ensure that the quality of CEE data is improved and accurate in the future, the Department of Labour should establish the total universe of designated employers for employment equity and continuously monitor and update this (Department of Labour, 2003). The universe could then be used to incorporate weights that take into account non-response. This would not solve non-response bias, but would likely lessen it, and make comparisons over time more accurate.

This paper has shown the difficulties in comparing the PALMS and CEE data due to the inconsistent sample of firms represented in the CEE reports over time, the differences in the definition of a firm in the two sources of data and the small sample sizes in the household surveys for some subgroups. Given the large changes in the CEE samples over time, it is recommended that further research investigating demographic transformation in the South African labour market is undertaken using household survey data.

APPENDIX A: Tables

Table 6: Percentage of Employment Equity plans included in CEE analysis

CEE report number	Plans received	Plans used in analysis	Percentage of plans used in analysis
2000	12 980	8250	63.56%
2004	9389	5554	59.15%
2006	6502	4394	67.58%
2008	10 580	7229	68.33%
2010	18 534	16 698	90.09%
2012	23 312	22 012	94.42%
2014	24 291	24 291	100%
2015	25 030	25 030	100%
2016	26 255	26 255	100%
2017	27 163	27 163	100%
2018	27 485	27 485	100%

Source: CEE Reports.

Table 7: Proportions of 50+ firm employees by race in CEE reports and PALMS

		2000	2002	2004	2006	2008	2010	2012	2014	2015
African	CEE	0.5569	0.5674	0.5860	0.5951	0.6537	0.6479	0.669	0.6855	0.6914
	PALMS	0.5836 (0.0154)	0.6193 (0.0143)	0.6198 (0.018)	0.6401 (0.0186)	0.6667 (0.0148)	0.6596 (0.0154)	0.6779 (0.0141)	0.6993 (0.0141)	0.6987 (0.0126)
Coloured	CEE	0.1483	0.1375	0.1361	0.1288	0.1224	0.1269	0.1200	0.1148	0.1164
	PALMS	0.1366 (0.0097)	0.1238 (0.0091)	0.1287 (0.013)	0.1358 (0.0139)	0.1313 (0.0098)	0.1414 (0.0106)	0.1259 (0.0092)	0.1140 (0.0085)	0.1201 (0.0092)
Indian/Asian	CEE	0.047	0.0479	0.0489	0.0457	0.0448	0.0450	0.0429	0.0430	0.0426
	PALMS	0.0485 (0.0072)	0.0435 (0.0058)	0.0403 (0.0065)	0.0390 (0.0068)	0.0341 (0.0046)	0.0378 (0.0059)	0.0467 (0.0067)	0.0497 (0.0064)	0.0400 (0.0054)
White	CEE	0.2478	0.2472	0.2290	0.2304	0.1791	0.1802	0.1681	0.1567	0.1497
	PALMS	0.2295 (0.014)	0.2123 (0.0124)	0.2113 (0.015)	0.1851 (0.0156)	0.1679 (0.012)	0.1612 (0.0129)	0.1495 (0.0112)	0.1371 (0.0099)	0.1412 (0.0092)
Sample size in PALMS		6421	6939	6032	6416	6575	5813	6470	6567	5667

Sources: CEE Reports and PALMS (2019).
Standard errors in parentheses.

Table 8: Proportions of 50+ firm employees by gender in CEE reports and PALMS

		2000	2002	2004	2006	2008	2010	2012	2014	2015
Male	CEE	0.6480	0.6423	0.6397	0.6690	0.6265	0.6077	0.5998	0.5824	0.5057
	PALMS	0.6601 (0.0091)	0.6521 (0.0081)	0.6513 (0.0097)	0.6686 (0.0088)	0.6352 (0.0078)	0.6294 (0.0083)	0.6088 (0.007)	0.6077 (0.0076)	0.5914 (0.0073)
Female	CEE	0.3520	0.3577	0.3603	0.3310	0.3735	0.3923	0.4002	0.4176	0.4943
	PALMS	0.3399 (0.0091)	0.3479 (0.0081)	0.3487 (0.0097)	0.3314 (0.0088)	0.3648 (0.0078)	0.3706 (0.0083)	0.3912 (0.007)	0.3923 (0.0076)	0.4086 (0.0073)
Sample size in PALMS		6421	6941	6043	6426	6575	5813	6470	6567	5667

Sources: CEE Reports and PALMS (2019).
Standard errors in parentheses.

Table 9: Proportions of 50+ firm employees by public/private sector employment in CEE reports and PALMS

		2000	2008	2010	2014	2015	2016
Private Sector	CEE	0.8029	0.7901	0.7920	0.8388	0.8457	0.8344
	PALMS	0.6935 (0.0107)	0.7558 (0.0083)	0.7381 (0.0094)	0.7384 (0.0091)	0.7306 (0.0083)	0.7266 (0.0082)
Public Sector	CEE	0.1971	0.2099	0.2080	0.1612	0.1543	0.1656
	PALMS	0.3065 (0.1070)	0.2442 (0.0083)	0.2619 (0.0094)	0.2616 (0.0091)	0.2694 (0.0083)	0.2734 (0.0082)
Sample size in PALMS		6403	6575	5813	6567	5667	5541

Sources: CEE Reports and PALMS (2019).
Standard errors in parentheses.

Table 10: Proportions of 50+ firm employees for CEE and PALMS by occupational level, gender and race

			2002	2004	2006	2008	2010	2012	2014	2015
Top and Senior Management										
Male	African	CEE	0.8120	0.0940	0.0959	0.1158	0.1141	0.1257	0.1257	0.1300
		PALMS	0.2131 (0.0287)	0.1810 (0.0293)	0.1549 (0.0298)	0.1641 (0.0216)	0.1994 (0.0261)	0.2394 (0.0272)	0.2060 (0.0247)	0.1964 (0.0225)
	White	CEE	0.6442	0.6062	0.5589	0.5273	0.517	0.4736	0.4736	0.4631
		PALMS	0.3933 (0.0315)	0.4764 (0.0422)	0.4168 (0.0404)	0.3646 (0.0303)	0.3585 (0.0347)	0.2642 (0.0293)	0.2946 (0.0301)	0.3198 (0.0279)
Female	African	CEE	0.0241	0.0325	0.0348	0.0508	0.0510	0.0651	0.0651	0.0678
		PALMS	0.0638 (0.0172)	0.0466 (0.0164)	0.1068 (0.0268)	0.0932 (0.0165)	0.1393 (0.0273)	0.1133 (0.0237)	0.1195 (0.0188)	0.1312 (0.0189)
	White	CEE	0.1453	0.1514	0.1803	0.1644	0.1680	0.1717	0.1717	0.1702
		PALMS	0.1972 (0.0266)	0.1210 (0.0223)	0.1715 (0.0336)	0.1994 (0.0309)	0.1128 (0.0186)	0.1332 (0.0246)	0.1821 (0.0310)	0.1633 (0.0193)
Sample size in PALMS			352	310	252	390	386	401	482	396
Professionally Qualified										
Male	African	CEE	0.1130	0.2084	0.1314	0.1687	0.1806	0.1843	0.1997	0.2030
		PALMS	0.1138 (0.0281)	0.1578 (0.0317)	0.2347 (0.0457)	0.2059 (0.0218)	0.2355 (0.0271)	0.2158 (0.0258)	0.2727 (0.0389)	0.2156 (0.0258)
	White	CEE	0.4742	0.3266	0.4063	0.3388	0.3052	0.2835	0.2606	0.2303
		PALMS	0.3637 (0.0404)	0.2539 (0.0399)	0.3253 (0.0513)	0.2261 (0.0235)	0.2191 (0.0300)	0.2476 (0.0396)	0.1672 (0.0298)	0.2433 (0.0295)
Female	African	CEE	0.0492	0.1800	0.0728	0.1174	0.1359	0.1647	0.1775	0.1943

		PALMS	0.2002 (0.0275)	0.2083 (0.0374)	0.1055 (0.0235)	0.1923 (0.0189)	0.1750 (0.0215)	0.1902 (0.0223)	0.1679 (0.0252)	0.1936 (0.0251)
	White	CEE	0.2111	0.1623	0.2238	0.1883	0.1821	0.1793	0.1704	0.1609
		PALMS	0.1810 (0.0302)	0.2704 (0.0584)	0.1766 (0.0368)	0.1762 (0.0227)	0.1914 (0.0233)	0.1460 (0.0215)	0.1853 (0.0263)	0.1906 (0.0255)
Sample size in PALMS			275	204	225	510	445	483	308	317
Skilled Technical										
Male	African	CEE	0.2072	0.2040	0.2959	0.3119	0.2959	0.3241	0.3253	0.3309
		PALMS	0.2186 (0.0182)	0.2049 (0.0335)	0.2525 (0.0264)	0.2588 (0.0234)	0.2742 (0.0252)	0.2364 (0.0206)	0.2720 (0.0236)	0.2659 (0.0205)
	White	CEE	0.2402	0.2410	0.2348	0.1871	0.1600	0.1453	0.1251	0.1201
		PALMS	0.2102 (0.0202)	0.2029 (0.0292)	0.1687 (0.0321)	0.1419 (0.0188)	0.1241 (0.0171)	0.1432 (0.0209)	0.1179 (0.0162)	0.1126 (0.0181)
Female	African	CEE	0.1509	0.1287	0.1015	0.1914	0.2209	0.2367	0.2695	0.2670
		PALMS	0.2445 (0.0221)	0.2368 (0.0269)	0.2151 (0.0243)	0.2579 (0.0228)	0.2626 (0.0228)	0.3067 (0.0257)	0.3291 (0.0247)	0.3668 (0.0223)
	White	CEE	0.1908	0.1982	0.1739	0.1266	0.1289	0.1140	0.1055	0.1039
		PALMS	0.1593 (0.0164)	0.1884 (0.0322)	0.1482 (0.0279)	0.1229 (0.0151)	0.0906 (0.0139)	0.1219 (0.0199)	0.0895 (0.0134)	0.0899 (0.0144)
Sample size in PALMS			767	552	572	702	684	701	687	581
Semi-skilled										
Male	African	CEE	0.4597	0.4852	0.5124	0.4821	0.4811	0.4802	0.4683	0.4660
		PALMS	0.4245 (0.0158)	0.4185 (0.0199)	0.4518 (0.0185)	0.4623 (0.0153)	0.4560 (0.0169)	0.4329 (0.0140)	0.4522 (0.0141)	0.4305 (0.0133)
	White	CEE	0.0684	0.0622	0.0447	0.0418	0.0345	0.0318	0.0300	0.0279

		PALMS	0.1342 (0.0102)	0.1135 (0.0106)	0.0971 (0.0122)	0.0745 (0.0075)	0.0752 (0.0089)	0.0834 (0.0087)	0.0642 (0.0072)	0.0709 (0.0071)
Female	African	CEE	0.1591	0.1546	0.1689	0.2394	0.2562	0.2746	0.3031	0.3120
		PALMS	0.1630 (0.0100)	0.1751 (0.0137)	0.1963 (0.0126)	0.2200 (0.0104)	0.2172 (0.0119)	0.2611 (0.0116)	0.2718 (0.0122)	0.2779 (0.0109)
	White	CEE	0.1013	0.0918	0.0812	0.0569	0.0527	0.0466	0.0433	0.0386
		PALMS	0.1008 (0.0094)	0.0964 (0.0111)	0.0740 (0.0101)	0.0752 (0.0091)	0.075 (0.0093)	0.0529 (0.0061)	0.0487 (0.0058)	0.0499 (0.0064)
Sample size in PALMS			2584	2217	2480	2594	2201	2557	2658	2268
Unskilled										
Male	African	CEE	0.6147	0.5749	0.5992	0.5845	0.5920	0.5398	0.5386	0.5284
		PALMS	0.5740 (0.0155)	0.5783 (0.0179)	0.5962 (0.0177)	0.5875 (0.0143)	0.5610 (0.0173)	0.5463 (0.0150)	0.5397 (0.0155)	0.5337 (0.0146)
	White	CEE	0.0135	0.0112	0.0095	0.0082	0.0092	0.0081	0.0083	0.0082
		PALMS	0.0254 (0.0041)	0.0361 (0.0060)	0.0381 (0.0072)	0.0258 (0.0047)	0.0237 (0.0050)	0.0159 (0.0034)	0.0169 (0.0038)	0.0117 (0.0031)
Female	African	CEE	0.2261	0.2606	0.2541	0.2849	0.2993	0.3254	0.3268	0.3348
		PALMS	0.2267 (0.0119)	0.2290 (0.0131)	0.1997 (0.0108)	0.2481 (0.0113)	0.2574 (0.0128)	0.2879 (0.0122)	0.3027 (0.0130)	0.3127 (0.0129)
	White	CEE	0.0090	0.0158	0.0053	0.0038	0.0040	0.0039	0.0042	0.0040
		PALMS	0.0052 (0.002)	0.0070 (0.0024)	0.0020 (0.1539)	0.0026 (0.0011)	0.0012 (0.0012)	0.0021 (0.0011)	0.0012 (0.1300)	0.0016 (0.1740)
Sample size in PALMS			2921	2736	2883	2379	2097	2328	2432	2105

Sources: CEE Reports and PALMS (2019).
Standard errors in parentheses.

Table 11: Sample sizes by occupational level and race

		2002	2004	2006	2008	2010	2012	2014	2015
Top & Senior Management	African	100	78	82	113	128	143	158	145
	White	193	175	128	185	166	151	204	171
Professionally Qualified	African	90	79	96	226	195	192	136	140
	White	140	99	84	171	153	175	103	127
Skilled Technical & Junior Management	African	378	270	333	371	362	376	383	385
	White	233	168	105	163	129	147	140	95

Source: Own calculations using PALMS (2019).

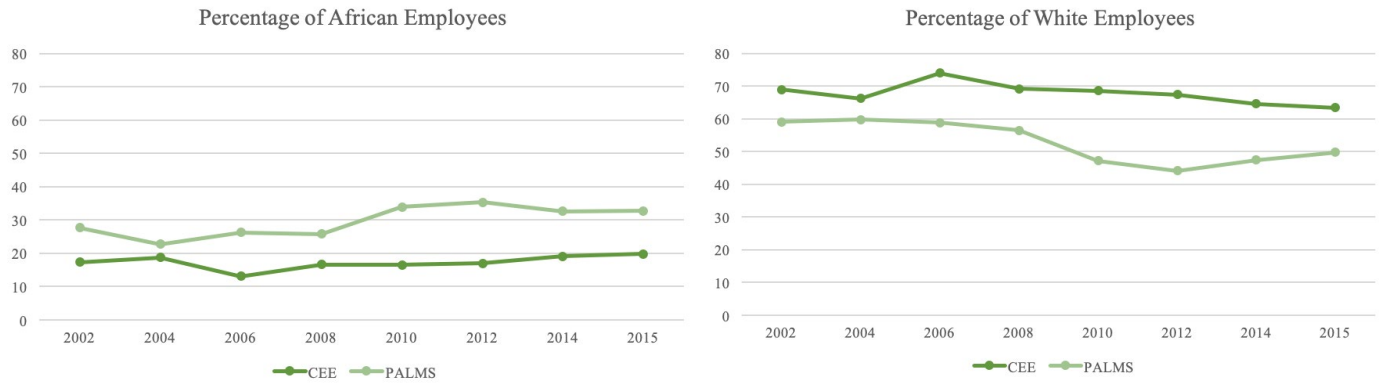
Table 12: Sample sizes by occupational level and gender

		2002	2004	2006	2008	2010	2012	2014	2015
Top & Senior Management	Male	270	238	186	266	257	269	314	249
	Female	82	74	67	124	129	132	168	147
Professionally Qualified	Male	150	109	126	264	224	253	161	157
	Female	125	99	100	246	221	230	147	160
Skilled Technical & Junior Management	Male	391	244	280	334	331	335	322	248
	Female	377	308	294	368	353	366	365	333

Source: Own calculations using PALMS (2019).

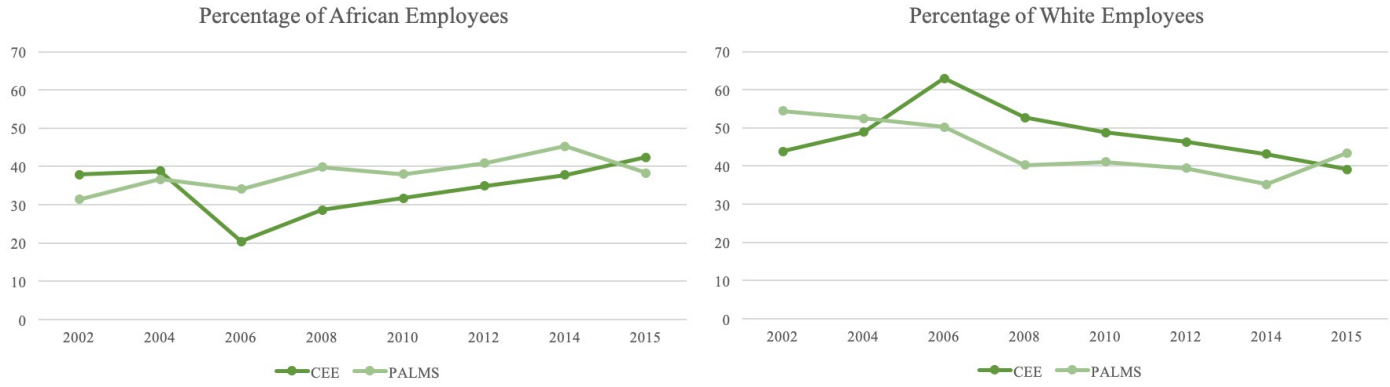
APPENDIX B: Figures

*Figure 5.1: Percentage of 50+ firm employees at **Top and Senior Management** level by race*



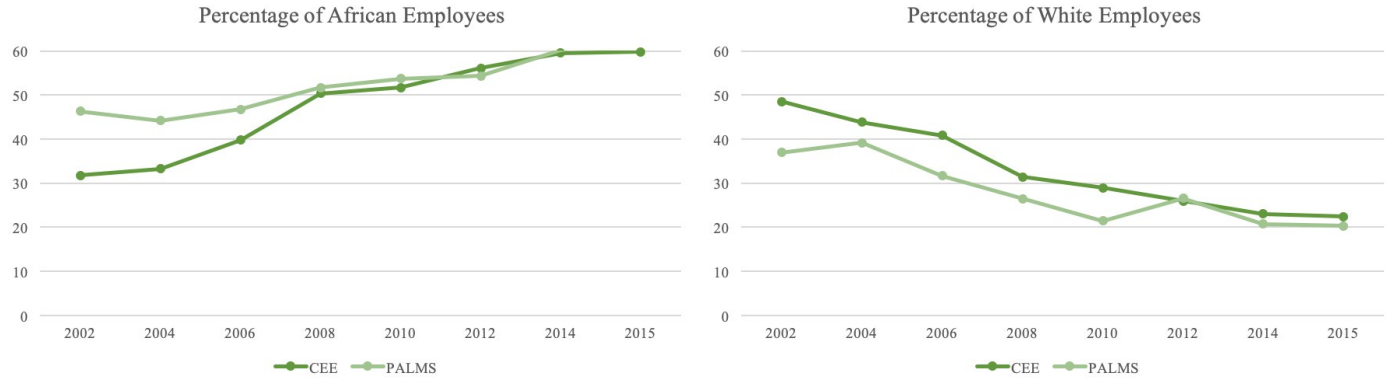
Source: Own calculations using figures from CEE reports and PALMS (2019).

*Figure 5.2: Percentage of 50+ firm employees at **Professionally Qualified** level by race*



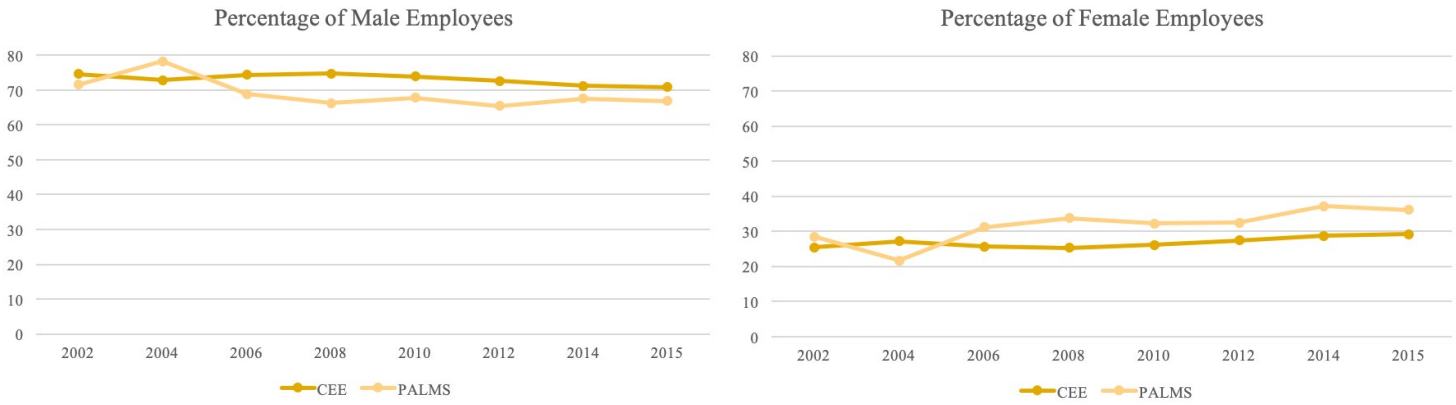
Source: Own calculations using figures from CEE reports and PALMS (2019).

*Figure 5.3: Percentage of 50+ firm employees at **Skilled Technical** level by race*



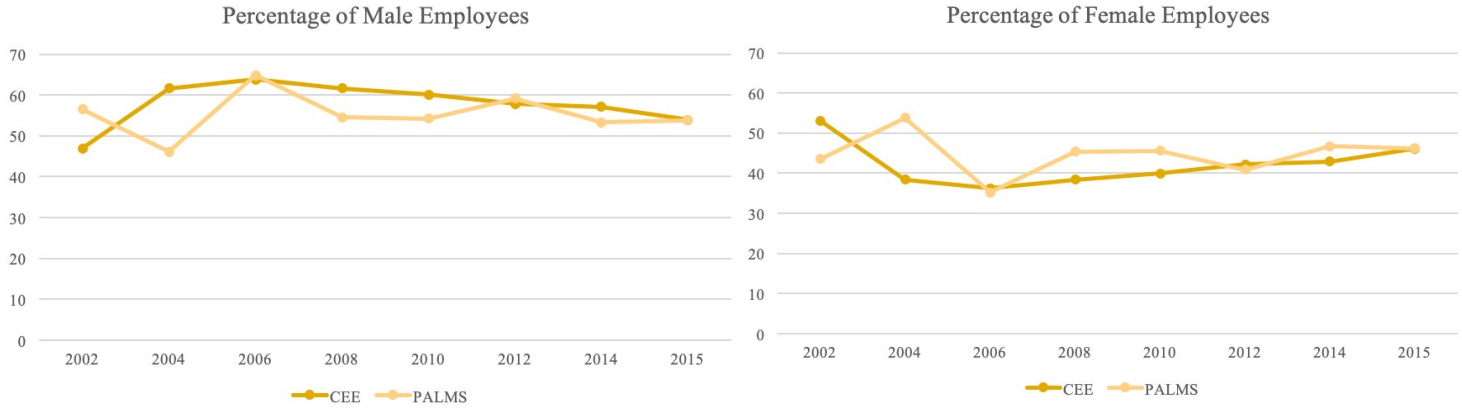
Source: Own calculations using figures from CEE reports and PALMS (2019).

*Figure 6.1: Percentage of 50+ firm employees at **Top & Senior Management** level by gender*



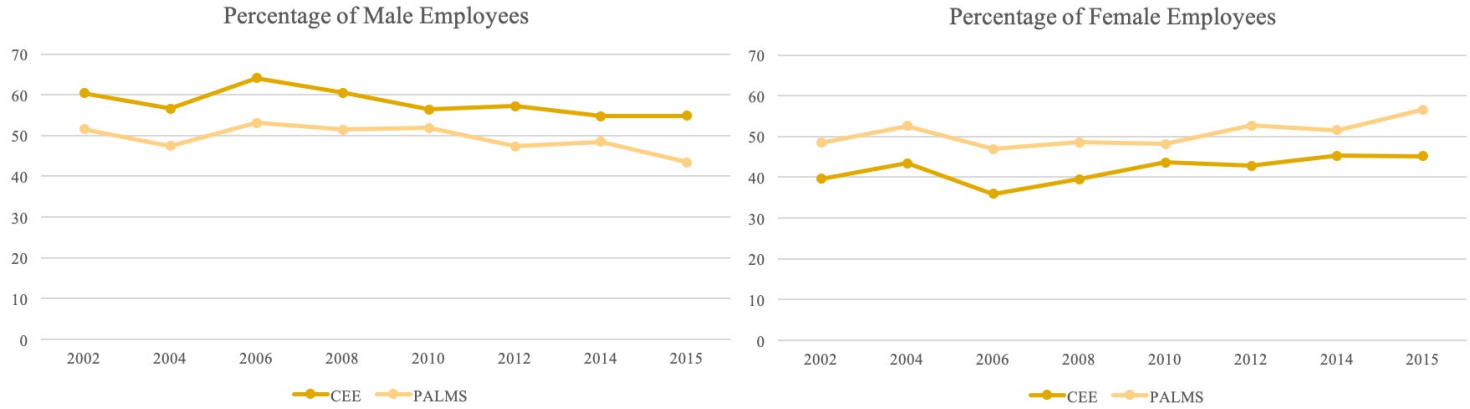
Source: Own calculations using figures from CEE reports and PALMS (2019).

*Figure 6.2: Percentage of 50+ firm employees at **Professionally Qualified** level by gender*



Source: Own calculations using figures from CEE reports and PALMS (2019).

*Figure 6.3: Percentage of 50+ firm employees at **Skilled Technical** level by gender*



Source: Own calculations using figures from CEE reports and PALMS (2019).

*Figure 7.1: Percentage of 50+ firm employees at **Top and Senior Management** level by race and gender*
Source: Own calculations using PALMS (2019) and figures from CEE reports.

*Figure 7.2: Percentage of 50+ firm employees at **Professionally Qualified** level by race and gender*
Source: Own calculations using PALMS (2019) and figures from CEE reports.

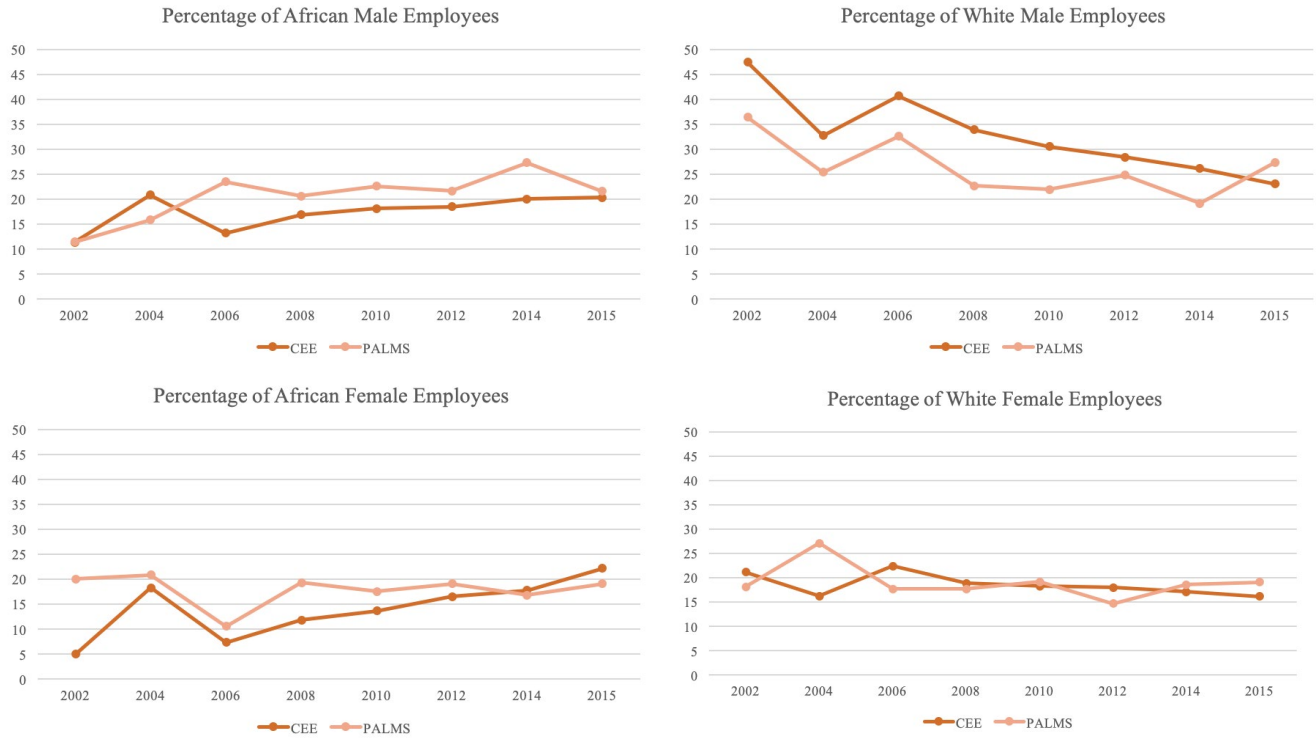


*Figure 7.3: Percentage of 50+ firm employees at **Skilled Technical** level by race and gender*
Source: Own calculations using PALMS (2019) and figures from CEE reports.

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