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WIDER Working Paper 2018/53

Occupational gender segregation in post-apartheid South Africa

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May 2018

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Abstract: In this paper, I show that occupations in South Africa are segregated and stratified not only by race, but also by gender. While some women (mostly black and Coloured) overwhelmingly fill low-paying jobs, others (mostly white and Indian/Asian but also Coloured) tend to fill higher-paying professional positions. I find some evidence of a long-term reduction in gender segregation and stratification, with women and men entering occupations previously dominated by the other gender, although this trend is sensitive to several data considerations. Most recent evidence, however, points at stagnation in this process. Distinct worker characteristics by gender, such as education, location, or age, cannot explain existing segregation or women's overrepresentation in low-paying jobs, compared with men. They do, however, partially explain their overrepresentation in higher-paying positions.

Keywords: gender, occupational segregation, stratification, low pay, post-apartheid, South Africa
JEL classification: J16, J42, J71, J82, O15, O55

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This study has been prepared within the UNU-WIDER project on 'Gender and development'.

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ISSN 1798-7237 ISBN 978-92-9256-495-7 https://doi.org/10.35188/UNU-WIDER/2018/495-7

Typescript prepared by Joseph Laredo.

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The Institute is funded through income from an endowment fund with additional contributions to its work programme from Finland, Sweden, and the United Kingdom as well as earmarked contributions for specific projects from a variety of donors.

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1 Introduction

Globally, South Africa stands out for having a dysfunctional labour market. Despite the growing labour market participation of women and youth in recent years, employment rates are especially low among women and the black/African population, falling below the average level in OECD countries and in other developing countries, including Brazil, India, and China (Arnal and Förster 2011).

It is well known that the apartheid regime, which ended after the first democratic elections in 1994, left South Africa with large racial inequalities in labour market outcomes such as employment rates and wages (e.g. Rospabé 2002), occupational attainment (e.g. Treiman et al. 1996), and segregation (Gradín 2017b). Not surprisingly, there is much higher poverty among the black population (e.g. Gradín 2013a). Apartheid had dramatic effects in the domain of gender equality, too. Its migrant labour system forced black men to temporarily leave their villages to work in cities or in the mining industry, while women and children were left in the rural areas, helping to explain higher poverty among female-headed households (Gelb 2004). Because of this disruption of family life, many women had to fulfil the role of both breadwinner and care-giver in challenging circumstances of high unemployment and HIV/AIDS prevalence, with very limited economic opportunities (Budlender and Lund 2011).

Several factors, such as lower marriage rates, increasing access to higher education, and the implementation of non-discriminatory legislation after the end of apartheid (e.g. the Employment Equity Act 1998) produced a growing feminization of the labour force that, however, also led to an increase in female unemployment and self-employment in the informal sector (Casale and Posel 2002; Posel 2014). Compared with men, South African women face lower employment rates (e.g. Leibbrandt et al. 2010) and receive lower wages (e.g. Burger and Yu 2007; Wittenberg 2014), neither of which is fully explained by their different endowments.

The literature on gender inequalities in post-apartheid South Africa has so far analysed in detail the extent, patterns, and drivers of the employment and wage gaps (Winter 1999; Hinks 2002; Grün 2004; Oosthuizen 2006; Ntuli 2007; Shepherd 2008; Casale and Posel 2010; Bhorat and Goga 2013; Kimani 2015). At this stage, we know much less about what happened to gender segregation across occupations or the extent to which they are stratified, e.g. with women working in jobs with lower pay. A few analyses of occupational attainment and of occupational segregation in the initial years are exceptions (Rospabé 2001; Parashar 2008).

In the case of racial inequalities, Gradín (2017b) has recently shown that occupational segregation by race continued to be high after the dismantlement of the discriminatory legislation in South Africa. There were also minor changes in its nature: the labour market is still strongly stratified by race, with blacks systematically overrepresented in the lowest-paying occupations, even after controlling for the differences by population group in education and other observed characteristics of workers. The aim of this paper is to extend the analysis of segregation and stratification of occupations in post-apartheid South Africa to consider the gender dimension using a similar approach. I will show that gender segregation and stratification across occupations seem to have been substantially reduced between 1996 and 2007, although the intensity of the decline between 2001 and 2007 is sensitive to some data considerations. Both trends have, however, stagnated in more recent years, which cannot be generally explained by differences in education or other relevant characteristics that male and female workers bring to the labour market. Furthermore, given the strong segmentation of the South African labour market by race, I will discuss the interplay between race and gender in configuring the South African labour market.

The second section briefly reviews the relevant literature, while the third and fourth sections describe the methodology and data. Sections 5–7 present the empirical results, and Section 8 offers some concluding remarks.

2 Gender and labour market outcomes in South Africa

Earlier studies after the end of apartheid in South Africa, including Winter (1999) or Rospabé (2001), showed that there were substantial gender inequalities in labour market outcomes such as employment, occupational attainment, and wages. These inequalities could barely be explained by gender differences in endowments of productive characteristics and exhibited different patterns across population groups.

Regarding the employment gap, Oosthuizen (2006) found a decreasing role of gender in explaining the probability of employment between 1995 and 2004 (while the same result did not apply to race). Using survival analysis, Kimani (2015) has recently shown that the probability of exiting unemployment is lower for women than for men if the exit is into employment, but higher when exiting into economic inactivity. Furthermore, higher education increases the hazard rate of women into employment more than for men, as earlier studies had already pointed out.

Some studies have reported lower earnings among women than among men, the differential being only partially explained by endowments, using the first post-apartheid labour force surveys (Winter 1999 and Hinks 2002, using OHS 1994 and 1995, respectively). The gender gaps increased in the following years (Ntuli 2007). Different patterns by race were identified. For example, white women were more affected by direct wage discrimination, whereas black women were found to increasingly suffer from discrimination at the hiring stage (Grün 2004). The gender wage gap tends to be higher at the bottom of the wage distribution—evidence of a sticky floor, especially among black women (Ntuli 2007; Shepherd 2008; Bhorat and Goga 2013). Paradoxically, it also tends to be higher in the union sector, after controlling for sorting by gender in union and non-union employment (Casale and Posel 2010).

The occupational distribution by sex has been identified as an important driver of changes in the gender wage gap in many countries (e.g. Groshen 1991; Bayard et al. 2003; Amuedo-Dorantes and De la Rica 2006; Brynin and Perales 2015). Shepherd (2008) showed that the decreasing wage gap in South Africa was also largely driven by the increasing number of white women entering higher-skilled occupations and industries since 1999. Some research has focused on the analysis of this occupational distribution by gender. Laltbapersad-Pillay (2002), for example, highlighted the differential in the percentage of men and women across the main occupational groups and income levels using the 1996 census. Rospabé (2001) used a multinomial logit model to estimate the gender gap in occupational attainment, i.e. the probability of working in a high-skilled, skilled, or semi-skilled/unskilled occupation with the 1999 October Household Survey. Women were found to be overrepresented in the two extreme categories. While their larger presence at the top was fully explained by their individual characteristics, their overrepresentation in the lowest category remained entirely unexplained in the early post-apartheid years. Parashar (2008) provided the only (to my knowledge) quantification of occupational segregation by gender in South Africa. Using the 2001 census, she measured the dissimilarity index to be 0.437 (2-digit classification). Unlike the situation in the USA, this level was lower than in the case of race (e.g. 0.572 between blacks and whites).

3 Methodology: measuring segregation and stratification

Occupational gender segregation means that men and women work in different occupations. The unequal distribution of occupations is aggravated by stratification when one gender, typically women, generally works in low-paying occupations (women's low-pay segregation).

Let N^w and N^m indicate the number of women and men in the workforce, and n_j^w and n_j^m the corresponding numbers working in occupation $j = 1, \dots, J$, where occupations have been sorted in ascending proportion of men, $n_j^m/(n_j^w + n_j^m)$. Then, $F_j^i = \sum_{s=1}^{j} f_j^i,\ i = w, m$ are the corresponding cumulative values for the j occupations with the largest overrepresentation of women. I label as g_j^i and G_j^i the relative and cumulative frequencies when occupations are indexed by their average earnings instead (w_j). In measuring these gender inequalities in the South African labour market, I use two distinct types of tools following Gradín (2017a,b).

On the one hand, the segregation and concentration (or low-pay segregation) curves plot the cumulative proportions of women (horizontal axis) and men (vertical axis) when occupations are indexed by the proportion of males (F_j^i, segregation) and by average earnings (G_j^i, concentration), respectively. These curves play the same role as the Lorenz and concentration curves in the measurement of income inequality. In the case of absence of segregation, when men and women work in the same proportion across all occupations, both curves correspond with the line of equality (the diagonal).

The segregation curve falls between the diagonal and the horizontal axis, the latter indicating the case of maximum segregation: there are only workers of one gender in each occupation. If two segregation curves do not cross each other, this indicates that the one below unambiguously shows higher segregation (for a large set of segregation indices consistent with a small set of value judgements).

The concentration curve can fall between the segregation curve and its mirror image above the diagonal. In the range in which it falls below the diagonal, it indicates that women tend to be segregated into low-paying occupations compared with men below any low-pay threshold in that range, i.e. there is (restricted) first-order stochastic dominance in the occupational distributions by gender. If it falls above the diagonal, however, it indicates the contrary: high-pay segregation of women. The further this curve is from the diagonal (the closer to the segregation curve or its mirror image), the more stratified the distribution of occupations by gender. Non-crossing curves reveal the highest level of low-pay/high-pay segregation in the one furthest from the diagonal.

On the other hand, I use the dissimilarity and Gini segregation and concentration (low-pay segregation) indices to quantify these phenomena and assess the trends over time even if the corresponding curves cross. The dissimilarity index of segregation measures the proportion of women that should shift from female- to male-dominated occupations to eliminate segregation, $D(f) = \frac{1}{2}\sum_{j=1}^{J}\left|f_j^w - f_j^m\right| = \max_{j\in[1,J]}\left\{F_j^w - F_j^m\right\}$. The corresponding concentration (or low-pay segregation index) indicates the proportion of women that should shift from their current occupation to another with higher average earnings to eliminate women's segregation into low-paying jobs (for any possible threshold defining low pay), $D(g) = G_s^w - G_s^m$; where $|G_s^w - G_s^m| = \max_{j\in[1,J]}\left\{\left|G_j^w - G_j^m\right|\right\}$. The two indices represent the maximum (absolute) vertical distance between the diagonal and the segregation and concentration curves, respectively.

The Gini indices of segregation and concentration are measured as twice the area between the line of equality and the segregation and concentration curves, respectively. The Gini segregation index deviates from the dissimilarity index because it also considers inequality in the distribution of occupations by gender within the sets of male- and female-dominated occupations (not only between the two types of occupations). It is indeed the average (among women) of all the vertical distances between the diagonal and the segregation curve: $Gini(f) = 2\sum_{j=1}^{J}\left(\hat{F}_j^w - \hat{F}_j^m\right) f_j^w$, where the hat indicates the midpoint between two adjacent occupations: $\hat{F}_j^i = \frac{1}{2}\left(F_{j-1}^i + F_j^i\right) = F_{j-1}^i + \frac{1}{2}f_j^i$. Similarly, the Gini index of concentration measures women's low-pay segregation as the average distance between the diagonal and the concentration curve, adding the area below and subtracting the area above the diagonal, $Gini(g) = 2\sum_{j=1}^{J}\left(\hat{G}_j^w - \hat{G}_j^m\right) g_j^w$.

All these indices range in absolute terms between 0 and 1, with higher values indicating more segregation or stratification. While the segregation indices are always non-negative, the sign of the concentration indices indicates whether stratification of women is into low-pay (positive) or high-pay (negative), with their absolute values bounded from above by the corresponding segregation indices. The concentration ratios measure the proportion of segregation that is low-pay by dividing each concentration index by its maximum (the segregation index): $r_S = \frac{S(g)}{S(f)}, S = Gini, D$.

I will measure the observed level of (low-pay) segregation (i.e. unconditional) but also the conditional level that remains after equalizing the observed characteristics (education, age, etc.) of men and women, by giving one sex the characteristics of the other. The level of (low-pay) segregation that goes away after this equalization is the aggregate compositional effect, that is, the level that can be explained by men and women having distinct characteristics. For that, I follow Gradín (2013b) and estimate a counterfactual distribution in which I re-weight the sample of women to reproduce the distribution of characteristics of men (and the other way around) based on their propensity score. In line with DiNardo et al. (1996), the re-weighting factors are obtained by estimating with a logit model the probability of being male based on individual characteristics described in the data section. Then, sample weights of women with a higher probability of 'being male' (given their characteristics) will be increased relative to women with a lower probability.

The contribution of each set of characteristics can be obtained in a second stage. I start with all logit coefficients switched off, that is, set to zero. I then estimate a sequence of re-weighting factors in which the coefficients associated with each factor are progressively switched on (changed from zero to their estimated values). The change in (low-pay) segregation before and after the corresponding coefficients are switched on indicates the contribution of that factor. Because this contribution depends on the order in which factors are introduced (path-dependency problem), I compute the average over all possible sequences, known as the Shapley decomposition (Chantreuil and Trannoy 2013; Shorrocks 2013).

4 Data

In my analysis, I primarily use the 1996 and 2001 censuses and the 2007 Community Survey undertaken by Statistics South Africa, harmonized by the Integrated Public Use Microdata Series (IPUMS-I, Minnesota Population Center 2015). The 1996 census was the first one in democratic South Africa. Although other censuses had been conducted since 1911, they lack reliability, especially with regard to the black population (e.g. Statistics South Africa 2007). There was a more recent census in 2011 but the essential information about occupation was not codified.

The universe refers to the working population not living in group quarters, 15–65 years old, who were employed, not in the Armed Forces. Separate analysis is made by racial groups. I follow here the traditional racial classification in the country that is rooted in the apartheid regime, but whose consequences are long-lasting: blacks/Africans (69 per cent of workers in 2007), whites (16 per cent), Coloureds (11 per cent), and Indians/Asians (4 per cent). This implies a total of 1,727,981 observations—739,668 women and 988,313 men—with the following distribution by year: 322,252 (women) and 450,338 (men) in 1996; 315,797 and 406,484 in 2001; and 101,619 and 131,491 in 2007.

Given the limited temporary coverage of census data, and for the sake of robustness, the analysis is complemented by using different labour force survey (LFS) statistics compiled by DataFirst (University of Cape Town) in The South Africa Post Apartheid Labour Market Series, 1994–2015 (PALMS v3.1, Kerr et al. 2016).[1] They are the annual October Household Surveys (OHS 1994–99), the Biannual Labour Force Surveys (BLFS 2000–07), and the Quarterly Labour Force Surveys (QLFS 2008–15). The sample consists of 1,242,585 observations (566,269 women and 676,316 men), with about 56,000 observations/year on average, from a minimum of 14,692 in 1996 to a maximum of 99,706 in 2008.

I use an occupational classification based on the 3-digit International Standard Classification of Occupations (ISCO-1988). In the case of census data, I use the IPUMS harmonized classification: 125 categories, including one for those with occupation not classified elsewhere or unknown, which is problematic given its substantial importance, especially in 2007 (16 per cent compared with around 7 per cent in the previous years). In the case of the BLFS and QLFS, I use the 3 and 2-digit classifications for robustness, given the smaller samples compared with the census.

There are some other relevant issues regarding the codification of jobs by occupation. For example, there is a low proportion of women in occupations 223 (Nursing and midwifery professionals) and 233 (Primary and pre-primary education teaching professionals) in the 2001 census compared with the other years and, accordingly, an overrepresentation of two related occupations: 323 (Nursing and midwifery associate professionals) and 331 (Primary education teaching associate professionals). In the case of the LFS, there is an exceptionally low proportion of women in OHS 1995 (33 per cent versus 38 per cent in 1994 and 1996), which makes this year an outlier. There are also some large discontinuities in the occupational trends that could reflect diverse ways of categorizing jobs. For example, the share of workers in occupation 621 (Subsistence agricultural and fishery workers), while insignificant in OHS 1994–99 and QLFS 2008–15, is large in BLFS 2000–07, especially among women in 2000. At the same time, there is a larger share of men in 921 (Agricultural, fishery and related labourers) in 1994–95. Even more problematic, because it affects a largely female-dominated occupation, the share of women in 913 (Domestic and related helpers, cleaners and launderers) is particularly small in 1994–95 compared with the other years. It looks as if they were just underrepresented in 1995, explaining the lower proportion of women in the labour force (as noted by Muller 2009), while in 1994 they might be hidden in the mixed category 919 for other elementary workers. The share of women in occupation 913 is particularly large in 2000, which seems to be compensated by a smaller proportion in 911 (Street vendors and related workers). In general, the LFS tend to underrepresent the share of domestic helpers compared with the censuses in 1996 and 2001.

The ranking of occupations by earnings in IPUMS data is obtained using contemporary average individual annual income in Rands for the 12 months prior to each census, computed for the entire

[1] See Kerr and Wittenberg (2016) for details.

working population (from interval midpoints). Similarly, the ranking of occupations using data from LFS is obtained using real earnings, after some adjustments (e.g. removing observations with an unknown occupation in earlier years and imputing missing information in some years from information in previous ones; see Gradín 2017b for details). In this last case, the median is used instead of the mean due to the presence of outliers. Both monetary variables have large numbers of zeros. It is important to note that in my approach, only ordinal information on earnings is used (i.e. the ranking of occupations), as this is much less demanding than studying wage discrimination, poverty, or inequality, which require the use of cardinal information at the individual level. Using this approach, there is a high weighted correlation between the occupational rankings produced by the two sources (e.g. about 92 per cent in 2007), and between these and the rankings produced by education (e.g. 91 per cent in the 2007 census for the proportion of workers with secondary school or higher education). As a result, stratification in this context could be interpreted to be either into low-paying or into low-skilled jobs indistinctly.

Among the worker characteristics that might affect job opportunities, I used the following to estimate conditional segregation using census data: to account for location, area of residence (urban or rural), and province (Western Cape, Eastern Cape, Northern Cape, Free State, KwaZulu-Natal, North West, Gauteng, Mpumalanga, and Limpopo); for educational attainment: no schooling, some primary, primary (6 years), lower secondary, secondary, university, other education, and unknown education. Immigration is measured by immigrant status (no immigrant, national immigrant, immigrant from abroad) and years residing in current dwelling. Marital status (single, never married, or unknown; married or in consensual union; separated, divorced, or spouse absent; widowed). Other demographic variables include: race (black/African, white, Coloured, and Indian/Asian), age interval (15–24, 25–34, 35–44, 45–54, and 55–64 years old), and disabled statuses. A similar set of characteristics was used with PALMS data, although omitting immigration, disability, and head/spouse status, due to the lack of information.

5 Occupations and gender

Before quantifying the levels of segregation, I briefly describe the distribution of occupations by gender and how they changed over time, considering that during the analysed period there was an increasing feminization of employment according to LFS (Figure 1): from 38 per cent of women in 1994 to 45 per cent in 2015. This increase was more moderate according to the census, from 42 per cent in 1996 to 44 per cent in 2007. Table 1 summarizes the distribution of men and women across the main occupational groups between 1994 and 2015. The evolution in occupations with the largest misrepresentation of women (in the most recent year) is displayed in Table 2 (1996–2007) and Table 3 (1994–2015).

It becomes clear that South African women tend to be largely overrepresented among elementary low-paying occupations, especially as domestic helpers and cleaners, street vendors, or housekeepers (all with an average income below 50 per cent of the 2007 median). However, women are also overrepresented at the middle of the occupational distribution (50–150 per cent of the median), in clerk occupations (e.g. tellers, office or client information clerks), and at the top (above 150 per cent of the median) in occupations such as professionals or technicians (teachers, nurses, etc.). On the opposite side, the largest underrepresentation of women occurs among mid-paying jobs such as driving, building, protective services, and mining, and at the top of the earnings distribution in managerial positions, as well as among physicists and engineers. Some of these gender gaps seem to be quite persistent over time, although, as explained below, there was a substantial reduction in the gender gap in the proportion of domestic workers (at least, based on the census). This picture hides large racial inequalities interplaying with gender, though.

Figure 2 draws the trends in the shares by race and gender in three occupational groups, with large women misrepresentation using census data. There is no doubt that race is even more important than gender when it comes to determining representation in these occupations. White and Indian/Asian women have a much higher representation at skilled occupations (managers and professionals), while Coloured and, especially, black women tend to be overrepresented at the bottom of the skills distribution (elementary occupations). When compared with men of the same race, black women clearly tend to be more overrepresented in elementary occupations than women of any other race, while the same is true for white women as professionals (although they are still underrepresented as managers). In all cases, these gender gaps seem to have been reduced over time.

A similar picture emerges if I use LFS instead (Figure 3). However, a relevant fact that will most certainly and critically affect our results in segregation analysis is the large discrepancy between census and LFS data regarding the evolution of women in the massively female-dominated occupation 913 (Figure 4; Table 2). Although both data sources give us similar figures for the total and by main population groups in 2007 (19 per cent census versus 21 per cent LFS; 27 per cent versus 26 per cent for blacks), censuses show higher figures in 1996 (29 per cent versus 23 per cent LFS; 43 per cent versus 34 per cent blacks) and 2001 (25 per cent versus 21 per cent LFS; 36 per cent blacks versus 27 per cent). Therefore, there is a sharp reduction of the gender gap in this important occupation in the census, but a much smaller one in the LFS. Both datasets exhibit problematic issues here. The reduction observed with census data between 2001 and 2007 may be overestimated, given the larger share of women (and men) with unknown occupation in 2007 (see Table 1). The LFS might be underestimating this important occupation with respect to the census and have large discontinuities in the series (e.g. in 1995 or between 1999 and 2000). For these reasons, I will primarily rely on the census data to assess the long-term trend, while running some sensitivity analysis on how to deal with the unknown category, but I keep using the LFS, mostly to describe the most recent trend, in which I expect data to be more comparable over time.

Table 1: Main occupational groups by gender (ISCO88: 1 digit)

Code	Label	1994			1996			2001			2007			2015		
		Women	Men	Diff.	Women	Men	Diff.	Women	Men	Diff.	Women	Men	Diff.	Women	Men	Diff.
	Census															
1	Legislators, senior officials and managers	-	-	-	2.8	5.1	-2.3	3.8	6.9	-3.1	7.7	9.5	-1.8	-	-	-
2,3	Professionals and Technicians	-	-	-	20.5	13.2	7.4	20.1	14.8	5.3	19.5	14.4	5.1	-	-	-
4	Clerks	-	-	-	13.5	4.3	9.2	17.2	7.1	10.1	11.6	4.4	7.2	-	-	-
5	Service workers and shop and market sales	-	-	-	7.9	10.1	-2.2	8.7	11.5	-2.8	8.3	10.1	-1.9	-	-	-
6	Skilled agricultural and fishery workers	-	-	-	1.9	5.4	-3.5	1.5	3.5	-2.0	3.0	4.6	-1.6	-	-	-
7	Crafts and related trades workers	-	-	-	4.6	20.1	-15.5	4.4	17.5	-13.1	4.3	17.3	-13.0	-	-	-
8	Plant and machine operators and assemblers	-	-	-	2.9	11.5	-8.6	2.8	12.8	-10.1	2.0	12.6	-10.6	-	-	-
9	Elementary occupations	-	-	-	40.0	22.0	18.0	34.6	19.7	14.9	26.8	12.3	14.5	-	-	-
-	Unknown	-	-	-	5.9	8.3	-2.4	7.0	6.2	0.8	16.9	14.8	2.1	-	-	-
	Total	-	-	-	100	100	0	100	100	0	100	100	0	-	-	-
	LFS															
1	Legislators, senior officials and managers	3.2	7.1	-3.9	3.9	6.2	-2.3	2.8	7.5	-4.7	5.6	9.0	-3.4	5.8	10.3	-4.4
2,3	Professionals and Technicians	18.8	11.8	7.0	24.3	15.4	8.9	16.3	12.3	4.0	19.5	12.7	6.8	17.6	11.8	5.8
4	Clerks	18.7	7.0	11.7	15.5	6.4	9.1	14.2	5.3	8.9	14.9	5.3	9.7	17.6	5.1	12.5
5	Service workers and shop and market sales	11.9	9.7	2.2	11.6	12.8	-1.2	14.3	12.7	1.6	12.6	12.5	0.1	17.0	14.1	2.9
6	Skilled agricultural and fishery workers	0.4	1.9	-1.5	1.6	4.4	-2.7	5.1	7.3	-2.2	3.1	3.0	0.2	0.4	0.9	-0.5
7	Crafts and related trades workers	4.5	16.6	-12.1	6.2	19.0	-12.8	4.9	19.6	-14.7	5.2	20.5	-15.3	3.0	19.8	-16.9
8	Plant and machine operators and assemblers	4.9	16.5	-11.6	2.6	13.9	-11.3	3.3	15.2	-12.0	3.1	13.7	-10.6	2.5	12.7	-10.3
9	Elementary occupations	37.8	29.5	8.3	34.3	22.0	12.4	39.1	20.0	19.2	36.0	23.4	12.6	36.3	25.4	10.9
	Total	100	100	0	100	100	0	100	100	0	100	100	0	100	100	0

Source: Own construction based on IPUMS-I and PALMS. Groups 2 and 3 aggregated here into a single category (see data section).

Table 2: Occupations with largest misrepresentation of women in 2007 (ISCO88: 3-digit)—10 occupations with largest over/under representation of women in 2007 Community Survey (difference between %women and %men)

Women are overrepresented in 2007					Women are underrepresented in 2007				
Code	Census	1996	2001	2007	Code	Census	1996	2001	2007
913	Domestic and related helpers, cleaners, and launderers	25.4	20.9	15.2	931	Mining and construction labourers	-1.8	-2.4	-1.3
233	Primary and pre-primary education teaching professionals	2.9	1.1	2.6	311	Physical and engineering science technicians	-0.6	-1.2	-1.4
421	Cashiers, tellers, and related clerks	2.2	2.7	2.4	131	General managers	-1.0	-1.6	-1.4
223	Nursing and midwifery professionals	2.4	0.5	2.1	811	Mining- and mineral-processing plant operators	-0.2	-0.2	-1.5
911	Street vendors and related workers	0.4	0.4	1.8	721	Metal moulders, welders, sheet-metal workers, structural-metal preparers	-1.6	-1.4	-1.6
411	Secretaries and keyboard-operating clerks	3.5	2.2	1.6	723	Machinery mechanics and fitters	-2.6	-2.1	-1.8
512	Housekeeping and restaurant services workers	1.1	1.3	1.3	713	Building finishers and related trades workers	-4.2	-2.2	-2.3
419	Other office clerks	1.0	3.2	1.2	516	Protective services workers	-4.4	-4.9	-4.1
422	Client information clerks	1.3	1.3	1.1	712	Building frame and related trades workers	-4.5	-3.3	-4.5
232	Secondary education teaching professionals	0.7	0.1	1.1	832	Motor-vehicle drivers	-5.2	-7.3	-6.5
Code	LFS	1996	2001	2007	Code	LFS	1996	2001	2007
913+919	Domestic and related helpers, cleaners, and launderers	20.8	19.2	18.2	931	Mining and construction labourers	-0.2	-2.3	-4.0
233	Primary and pre-primary education teaching professionals	0.2	0.6	1.1	311	Physical and engineering science technicians	-1.1	-1.1	-0.8
421	Cashiers, tellers and related clerks	2.3	2.3	2.8	131	General managers	-1.2	-2.4	-1.1
223	Nursing and midwifery professionals	0.3	0.4	0.3	811	Mining- and mineral-processing-plant operators	-0.3	-1.1	-0.6
911	Street vendors and related workers	1.0	7.2	4.1	721	Metal moulders, welders, sheet-metal workers, structural-metal preparers	-1.8	-1.9	-2.3
411	Secretaries and keyboard-operating clerks	3.1	2.3	1.8	723	Machinery mechanics and fitters	-2.3	-3.4	-3.1
512	Housekeeping and restaurant services workers	1.7	2.8	2.5	713	Building finishers and related trades workers	-2.4	-2.9	-3.1
419	Other office clerks	0.3	0.1	1.7	516	Protective services workers	-5.4	-4.6	-5.0
422	Client information clerks	2.0	1.5	1.3	712	Building frame and related trades workers	-3.7	-4.1	-5.0
232	Secondary education teaching professionals	0.5	0.3	0.6	832	Motor-vehicle drivers	-5.0	-5.6	-6.4

Source: Own construction based on IPUMS-I (Census) and PALMS (LFS).

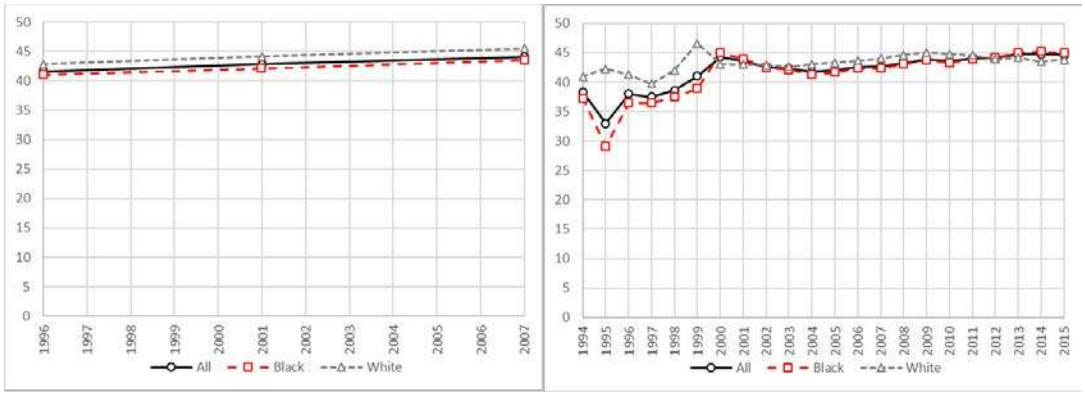
Table 3: Occupations with largest misrepresentation of women in 2015 (ISCO88: 3-digit)—10 occupations with largest over/under representation of women in 2015 LFS (difference between %women and %men)

Women are overrepresented in 2015				Women are underrepresented in 2015			
Code		1994	2015	Code		1994	2015
913+919	Domestic and related helpers, cleaners, and launderers	22.5	17.9	131	General managers	-1.9	-2.1
419	Other office clerks	4.0	4.5	833	Mining and construction labourers	-2.2	-2.2
513	Personal care and related workers	2.4	3.7	721	Metal moulders, welders, sheet-metal workers, structural- metal preparers	-1.9	-2.4
421	Cashiers, tellers and related clerks	2.5	3.7	723	Machinery mechanics and fitters	-3.3	-3.1
512	Housekeeping and restaurant services workers	1.7	3.0	931	Mining and construction labourers	-3.3	-3.2
911	Street vendors and related workers	0.1	2.5	713	Building finishers and related trades workers	-2.0	-3.2
323	Nursing and midwifery associate professionals	2.2	1.9	921	Agricultural, fishery and related labourers	-8.0	-4.7
331	Primary education teaching associate professionals	1.7	1.7	516	Protective services workers	-4.4	-4.8
422	Client information clerks	1.0	1.7	712	Building frame and related trades workers	-2.9	-5.2
411	Secretaries and keyboard-operating clerks	3.8	1.6	832	Motor-vehicle drivers	-7.3	-6.3

Source: Own construction based on PALMS.

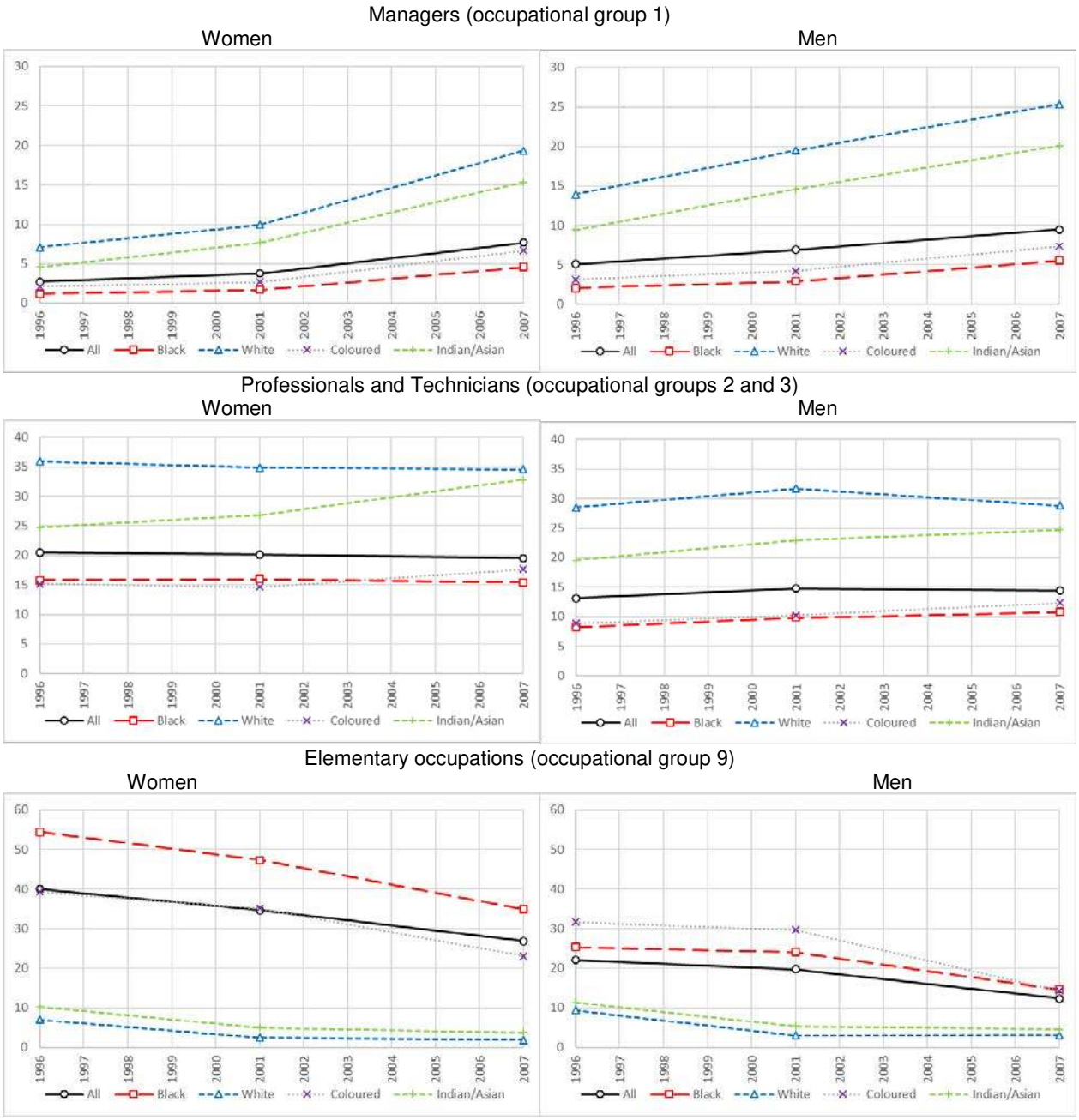
Figure 1: Percentage of female workers

a. Census b. LFS



Source: Own construction based on IPUMS-International (census) and PALMS (LFS).

Figure 2: Occupational groups by gender and race (census): percentage of workers



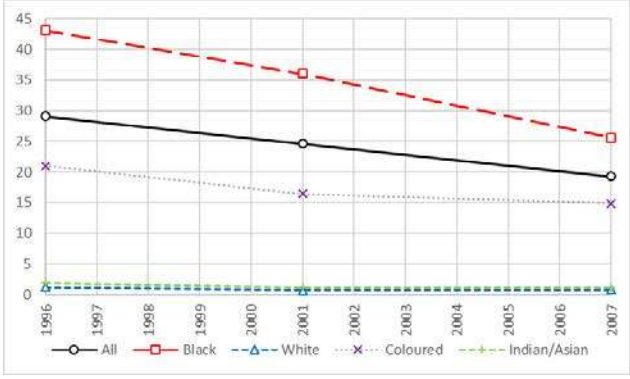
Source: Own construction using IPUMS-I.

Figure 3: Occupational groups by gender and race (LFS): percentage of workers

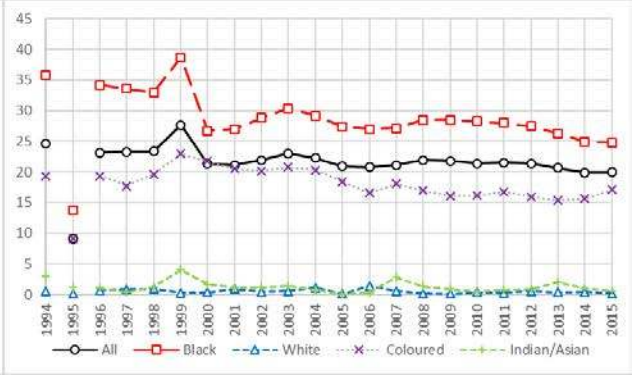
Source: Own construction using PALMS.

Figure 4: Percentage of women in domestic service

a. Census



b. LFS



Source: Own construction based on IPUMS-I (Census; code 913) and PALMS (LFS; codes 913 and 919). See data section for a discussion of comparability issues for this occupation.

6 Trends in gender occupational segregation

Gender segregation across occupations followed a clear declining trend between 1996 and 2007 based on census data (Figure 5a, b), with an 18 per cent reduction with Gini, 24 per cent with the dissimilarity index. The higher reduction with the latter reveals an intense desegregation between female- and male-dominated occupations.[2] Indeed, there was a substantial increase in the proportion of women and men entering occupations that were initially dominated by the other gender (the unknown category excluded) between 1996 and 2001: from 22.7 per cent to 25.6 per cent (women) and from 19.7 per cent to 23.8 per cent (men). Between 2001 and 2007 there was a modest increase for women (to 26.5 per cent) and a decline for men (20.8 per cent), but these figures are clearly underestimated given the larger share of the unknown category.[3] On the contrary, there was no reduction over time in the Gini within the sets of occupations dominated by one gender (the difference between Gini and dissimilarity). Segregation declined with similar intensity across all population groups if women are compared with men of their own race, except for a smaller reduction among Indians/Asians (12–13 per cent).

This general trend contrasts with the smaller decline in racial segregation (black versus white) estimated over the same period (Gradín 2017b): about 11 per cent, with an increase between 1996 and 2001, and a decline between 2001 and 2007.[4] In fact, the levels of gender and racial segregation were very similar in 1996 with Gini, but the former became 8 per cent smaller than the latter in 2007. Similarly, gender segregation was about 4 per cent higher than racial segregation in 1996 with the dissimilarity index, but 11 per cent smaller in 2007.

The level of gender segregation in 2007 was still high, however, with a Gini of 0.553 and a dissimilarity index of 0.393; higher among blacks than among any other group (0.582, compared

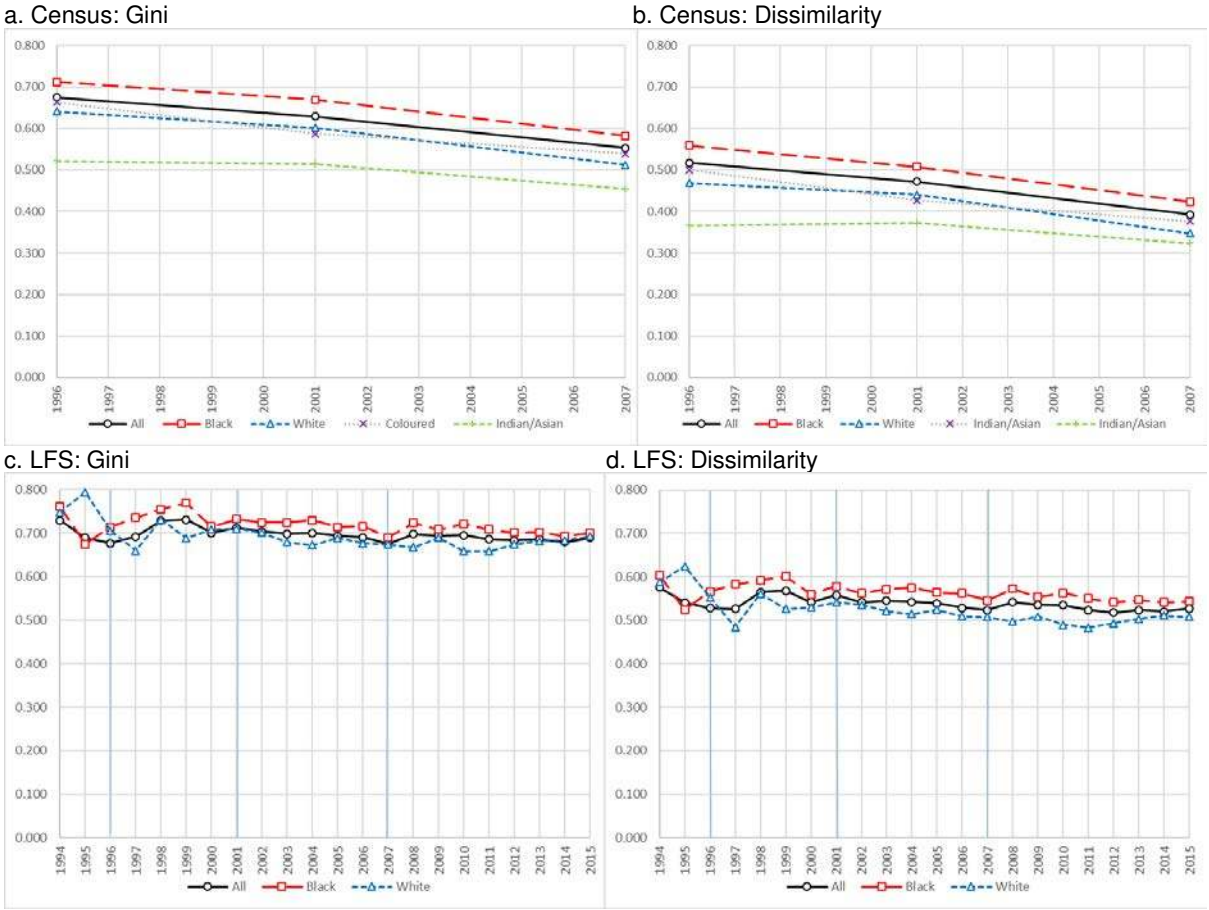
[2] I consider here an occupation to be dominated by one sex when the proportion of all workers of that sex who are employed in that occupation is larger than of the other.

[3] If workers in the unknown category are completely removed from the sample or that category is treated as a male-dominated occupation in 1996, the increase would be larger in the case of women (24.1 per cent, 27.5 per cent, 31.8 per cent in the first case; 28.6 per cent, 32.6 per cent, 43.3 per cent in the second one), while there would be little difference for men (21.5 per cent, 25.45 per cent, 24.4 per cent; the same as above in the second case).

[4] The level and trend of segregation is very similar if, in line with Anker et al. (2003), I exclude the agricultural sector (industry code 11: about 7 per cent of all workers in 2007).

with 0.540 for Coloureds, 0.512 for whites, and 0.454 for Indians/Asians). This hierarchy among population groups was nearly constant over time (except that segregation for whites was slightly above that of Coloureds in 2001).

Figure 5: Gender occupational segregation indices



Source: Own construction based on IPUMS-International (census) and PALMS (LFS).

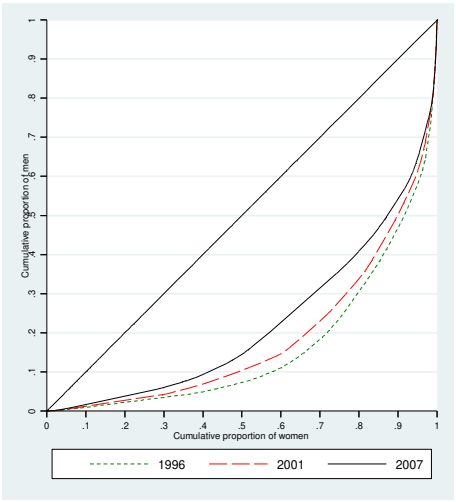
The decline in gender segregation in the census is robust to the choice of indices because it is corroborated by the segregation curves getting closer to the diagonal over time (Figure 6). This implies that most known segregation indices would point in the same direction. These segregation curves over time do not overlap for blacks either, but there is some overlapping at the bottom for whites between 2001 and 2007, which indicates no robust improvement in that case because indices more sensitive to occupations in which men are more strongly underrepresented could point at an increase in segregation. There is also a crossing in the curves for Coloureds between 2001 and 2007, in this case at the top, while there are several crossings in the curves for Indians/Asians.

A note of caution is, however, needed when assessing these trends due to the large and variable proportions of workers with unknown occupations over time. Different assumptions about the actual occupations of these workers may have a substantial impact on the segregation trend. For that reason, I now consider three possible scenarios as alternatives to the one considered before, in which I treated the unknown category as if it were only one occupation. In the first of these scenarios, I entirely remove workers with unknown occupation from the sample, which is equivalent to assuming that their distribution across occupations is the same as for the rest of the sample, conditional on sex. In an intermediate second scenario, I fix the proportion of unknown workers of each sex as in 1996 (and treated as one occupation), with the increase/decrease in 2001 and 2007 redistributed across the other occupations conditional on sex. In a third and last

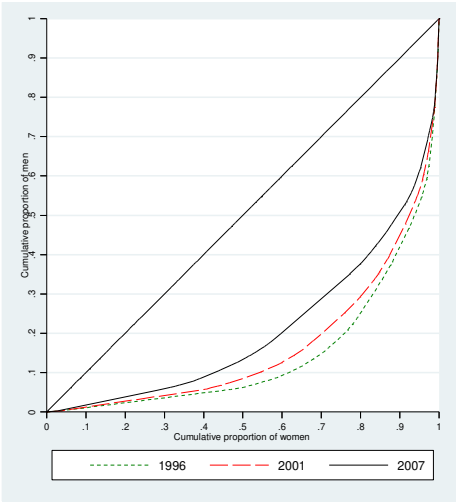
alternative, I split workers with unknown occupation into two completely segregated occupational categories, one entirely made up of men and another with only women in it, thus assuming the worst scenario in terms of dissimilarity.

Figure 6: Gender segregation curves by population group

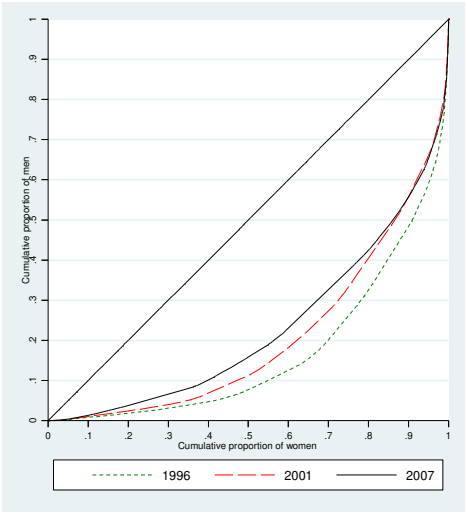
a. All



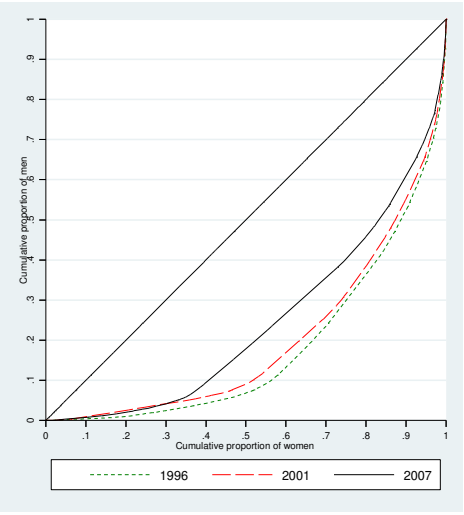
b. Black



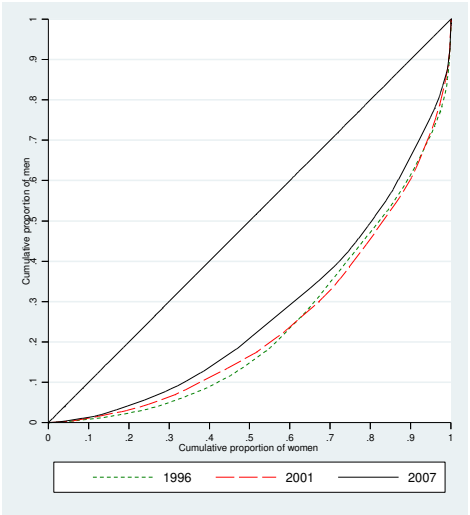
c. Coloured



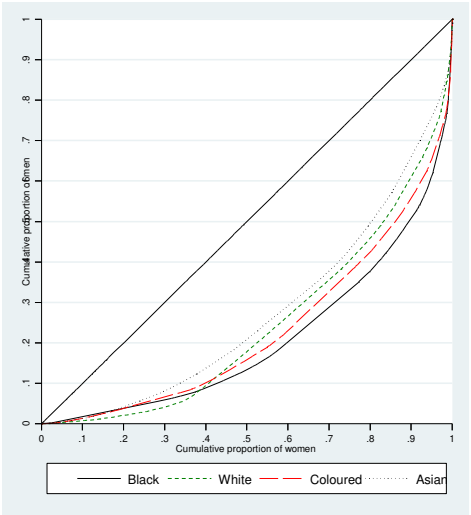
d. White



e. Indian/Asian



f. All



Source: Own construction based on IPUMS-International (3-digit classification).

The robustness results reported in Table 4 show that the decline in segregation between 1996 and 2001 or 2007 is quite robust to the different assumptions about the occupations of those in the unknown category. The decline between 2001 and 2007, however, would be substantially smaller if the distribution of occupations in the unknown category or its changes over time did not differ much from the rest. If these occupations or changes over time are highly segregated, instead, it could be that segregation was constant or even increased between 2001 and 2007.

Table 4: Robustness in the evolution of segregation

	Gini			Dissimilarity		
	1996	2001	2007	1996	2001	2007
Base scenario: Unknown as one occupation	0.675	0.629	0.553	0.517	0.472	0.393
Alternative 1: Unknown removed	0.698	0.650	0.609	0.544	0.501	0.454
Alternative 2: Unknown as in 1996, rest removed	0.675	0.628	0.589	0.517	0.476	0.434
Alternative 3: Unknown split into two segregated occupations	0.740	0.694	0.723	0.576	0.534	0.541

Source: Own construction based on IPUMS-International.

The LFS data point to a much higher persistence of gender segregation in the long term than the census data (Figure 5c–d), something that can be partially explained by the data issues discussed in the previous section, especially the underestimation of domestic helpers in the initial years. We only observe about 1 per cent reduction with both indices either for the 1996–2007 period covered by the census or for the entire 1994–2015 period. The largest reduction between the highest and lowest pick years is still below 10 per cent. A similar trend is obtained using 1- and 2-digit classifications of occupations (Tables A1–2 in the Appendix).

Looking at the entire LFS trend, we see that after a short decline in the mid 1990s[5], segregation appears to fluctuate around its average values of near 0.700 for Gini or 0.540 for dissimilarity.[6] This trend suggests a high persistence of gender segregation in the most recent years, when the series should be more reliable and comparable over time. With LFS, we also find that segregation tends to be smaller by gender than by race (about 6–7 per cent on average), and higher among blacks than among whites, although the gap tends to be much smaller than was found with census data and seems to be narrowed in most recent years.[7]

Working women and men differ to some extent in their characteristics (Table 5). For example, according to the 2007 Community Survey, working women tend to be less likely than men to be married (49 per cent versus 61 per cent), Indian/Asian, or black, and generally have attained higher education (42 per cent with secondary school and 9 per cent with a university degree, compared with 38 per cent and 7 per cent of men). More working women are in middle-aged groups and live in rural areas or in Eastern and Western Cape or KwaZulu-Natal (and a lower proportion in Gauteng or North West).[8] These differences result from the combination of gender differences in the working-age population and a strong sorting of women into employment. I will estimate segregation conditional on gender differences in these observable characteristics, but, unlike some of the traditional wage gap decompositions, the available methodology does not allow to control

[5] This decline would be a bit larger had I not removed workers with unknown occupation from the sample.

[6] These fluctuations over time are negatively correlated with the proportion of women among workers (-0.217 correlation with Gini and -0.353 with dissimilarity). This suggests that the incorporation of women into employment tends to mitigate segregation because they enter some occupations dominated by men.

[7] The trends for all groups are reported in Tables A3–10 in the Appendix.

[8] Table A11 in the Appendix shows gender differences in education by population group. Table A12 reports the logit regressions using census data.

for potential selection bias caused by unobservable traits, especially among women who have the lowest employment rates. Our analysis is thus conditional on men and women having a job.

Altogether, differences in observable characteristics by gender explain virtually nothing of their occupational segregation in any year and population group, however. Only between 0 and 2 per cent of Gini or dissimilarity segregation goes away after women are given the characteristics of men while keeping their conditional occupational distribution in South Africa according to census data. This applies to all population groups and is not much different with the dissimilarity index (Table 6).[9] The explained proportions are even smaller in the case of LFS (Table A14 in the Appendix).[10] This (smaller) percentage of segregation explained by characteristics might be slightly underestimated as a result of my not considering the different field of degree of college workers of each gender, as I did in the case of the USA (Gradín 2017a, where the total Gini segregation explained rose from 1.7 to 7.1 per cent after including that variable, using a similar approach). But it seems that gender segregation has little or nothing to do with worker-distinct characteristics by gender. In contrast, about 29 per cent of Gini racial segregation in 2007 in South Africa was directly associated with differences in observed characteristics between blacks and whites (Gradín 2017b).

[9] The proportion of segregation explained is only slightly higher (2.1 per cent) if, instead, I give women the male conditional distribution across occupations (while keeping their own distribution of characteristics), i.e. I reweight the male sample to reproduce women's characteristics.

[10] Except in 1995 (5 per cent with Gini and 9 per cent with dissimilarity, due to the misrepresentation of some groups already mentioned).

Table 5: Worker characteristics by gender (percentage)

	Women						Men					
	Census			LFS			Census			LFS		
	1996	2001	2007	1996	2007	2015	1996	2001	2007	1996	2007	2015
Rural	24.1	22.7	26.1	25.4		25.7	27.5	25.8	24.3	29.5		26.5
Urban	75.9	77.3	73.9	74.6		74.3	72.5	74.2	75.7	70.5		73.5
Western Cape	16.3	16.8	16.2	16.9	15.3	14.2	15.4	15.5	14.9	15.1	14.1	13.6
Eastern Cape	9.9	9.0	11.2	10.9	11.0	10.5	8.5	7.4	8.5	9.1	9.0	8.9
Northern Cape	2.3	2.0	1.8	2.2	1.9	2.0	2.6	2.2	2.0	2.4	2.5	2.1
Free State	7.1	6.1	5.1	8.0	5.6	5.7	6.9	6.3	5.9	8.1	6.2	6.1
KwaZulu-Natal	17.7	17.4	17.3	18.9	18.8	18.3	17.1	16.2	15.7	17.9	16.5	16.4
North West	7.0	6.5	6.0	6.3	5.7	5.2	8.2	8.4	8.3	8.3	6.7	6.6
Gauteng	27.5	29.8	28.8	25.0	27.2	27.5	27.9	30.8	31.3	25.5	31.4	29.2
Mpumalanga	5.9	5.7	6.6	6.5	7.0	7.2	7.4	6.8	7.6	7.6	7.5	7.6
Limpopo	6.3	6.7	6.9	5.3	7.4	9.3	6.0	6.3	5.8	5.8	6.0	9.5
No schooling	10.2	9.2	5.3	8.0	9.4	3.8	11.6	10.0	5.3	9.7	9.8	3.7
Some primary	8.3	8.3	8.0	9.6	7.7	4.8	9.6	9.9	9.9	10.6	8.3	5.6
Primary	20.0	16.6	14.6	10.7	5.5	6.4	20.1	17.2	16.3	11.9	6.0	7.1
Lower secondary	21.0	20.1	20.4	30.3	31.4	31.0	20.9	21.4	22.1	32.2	33.4	34.7
Secondary	31.2	39.5	41.9	35.8	39.0	44.7	28.1	35.5	38.0	30.0	36.2	41.6
University	4.2	6.3	8.6	5.6	7.1	9.3	4.2	6.0	7.4	5.6	6.3	7.3
Other education	3.9		1.3				4.1		1.1			
Unknown education	1.3						1.5					
15–24 years old	12.8	11.5	12.5	12.2	10.6	7.7	12.5	11.6	13.4	11.0	12.0	9.2
25–34 years old	34.6	31.6	28.6	34.2	30.3	30.8	34.3	33.3	30.3	35.0	32.8	33.5
35–44 years old	30.3	31.8	29.9	31.6	30.0	29.1	28.8	29.6	27.7	30.1	27.9	28.7
45–54 years old	16.4	19.0	21.0	16.4	21.5	22.3	17.0	18.1	19.6	16.9	19.0	19.8
55–65 years old	5.9	6.1	8.0	5.6	7.6	10.0	7.3	7.4	9.0	7.0	8.3	8.9
White	22.1	20.8	17.0	22.4	16.0	13.5	21.0	19.7	16.0	19.4	15.1	13.7
African/black	59.6	61.2	67.9	59.3	69.8	73.1	61.0	63.2	69.4	63.4	70.9	72.5
Indian/Asian	3.6	3.9	3.4	3.4	2.6	2.6	4.6	4.7	4.2	3.9	3.5	3.3
Coloured	13.7	14.2	11.7	14.9	11.6	10.8	12.5	12.4	10.4	13.2	10.5	10.5
Other	1.0						0.9					
Single/never married/unknown	36.0	35.9	39.8	29.5	38.8	43.9	31.1	29.1	35.6	29.2	37.4	40.2
Married/in union	51.8	51.9	48.8	58.7	49.1	45.8	65.4	67.6	61.2	67.9	59.5	56.4
Separated/divorced/spouse absent (a)	7.2	7.0	5.6				2.6	2.4	2.0			
Widowed (b)	4.9	5.2	5.8				0.9	0.9	1.2			
(a) + (b)	12.2	12.2	11.4	11.8	12.1	10.3	3.5	3.3	3.2	2.9	3.1	3.3
Disabled	5.8	2.8	1.7				5.2	2.8	1.8			
Native	91.2	94.1	94.9				88.8	92.7	92.4			
National immigrant	7.9	5.4	4.4				9.5	6.4	6.2			
Immigrant from abroad	0.9	0.5	0.7				1.7	0.9	1.4			

Source: Own construction based on IPUMS-International.

Table 6: Segregation indices (census): unconditional and conditional (or unexplained) values

	1996			2001			2007		
Gini	Unc.	Cond.	%Expl.	Unc.	Cond.	%Expl.	Unc.	Cond.	%Expl.
All	0.675	0.671	0.7	0.629	0.624	0.8	0.553	0.553	0.1
	(0.001)	(0.001)		(0.001)	(0.001)		(0.002)	(0.002)	
Black	0.712	0.704	1.1	0.669	0.660	1.4	0.582	0.581	0.2
	(0.001)	(0.001)		(0.001)	(0.001)		(0.002)	(0.002)	
White	0.641	0.636	0.8	0.602	0.596	0.9	0.512	0.509	0.5
	(0.002)	(0.002)		(0.002)	(0.002)		(0.005)	(0.005)	
Coloured	0.663	0.656	1.1	0.587	0.582	0.8	0.540	0.535	0.9
	(0.003)	(0.003)		(0.003)	(0.003)		(0.006)	(0.006)	
Indian/Asian	0.522	0.516	1.0	0.514	0.506	1.6	0.454	0.446	1.9
	(0.005)	(0.005)		(0.005)	(0.006)		(0.011)	(0.012)	
Dissimilarity									
All	0.517	0.512	1.1	0.472	0.465	1.4	0.393	0.393	-0.1
	(0.001)	(0.001)		(0.001)	(0.001)		(0.002)	(0.002)	
Black	0.559	0.549	1.8	0.507	0.495	2.4	0.423	0.421	0.3
	(0.001)	(0.001)		(0.001)	(0.001)		(0.002)	(0.002)	
White	0.468	0.466	0.6	0.441	0.438	0.5	0.347	0.346	0.2
	(0.002)	(0.002)		(0.002)	(0.003)		(0.005)	(0.005)	
Coloured	0.500	0.487	2.6	0.426	0.412	3.4	0.376	0.372	1.1
	(0.003)	(0.003)		(0.003)	(0.003)		(0.006)	(0.006)	
Indian/Asian	0.366	0.362	1.1	0.372	0.362	2.9	0.323	0.315	2.6
	(0.005)	(0.006)		(0.005)	(0.006)		(0.011)	(0.011)	

Note: Unc. = Unconditional; Cond. = Conditional or unexplained; %Expl. = %Explained = %(Unc. – Cond.)/Uncond. Bootstrap standard errors (200 replications) showed below in parentheses.

Source: Own construction based on IPUMS-International (3-digit classification).

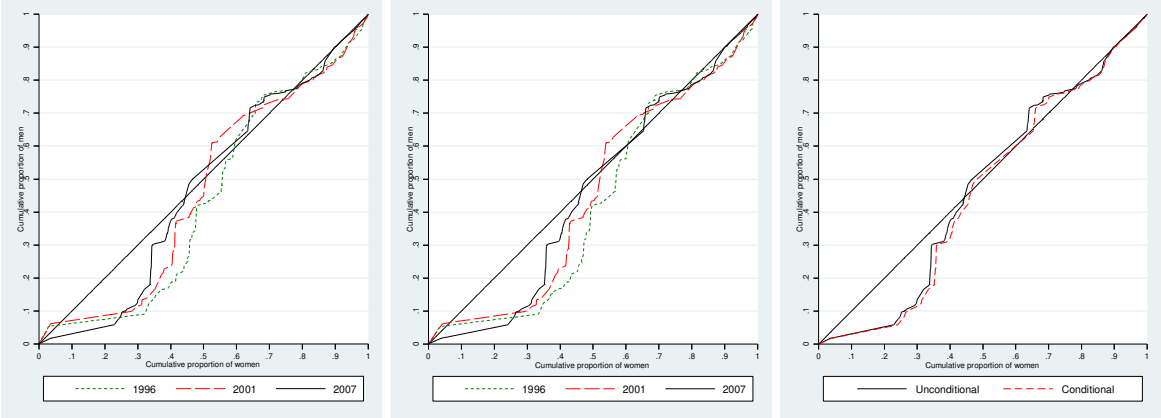
7 Occupational stratification by gender

The previous section showed that the labour market in South Africa is segregated along gender lines, but this does not consider the quality of the occupations that women and men hold. The concentration curve crossing the diagonal from below in 2007 (Figure 7a) reflects the large overrepresentation of women at the bottom of the earnings occupational distribution, but also in occupations at intermediate positions. The cumulative proportion of women in the least-paying occupations is larger than that of men up to the level in which both groups accumulate about 44 per cent of workers (when the concentration curve crosses the diagonal, indicating restricted stochastic dominance up to that point).

It is in the nature of gender segregation that we find more striking differences across population groups. Only black women and, to a lesser extent, Coloured ones, are clearly overrepresented in the lowest-paying occupations in 2007 compared with men of their own race (their concentration curves fall below the diagonal at the bottom of the distribution, Figures 8a–b). This is the result of the importance of (low-paying) female domestic helpers among these two groups, 26 per cent and 15 per cent respectively, compared with only around 1 per cent of white and Indian/Asian women (Figure 4). On the contrary, it is men who are overrepresented at the bottom of the occupational earnings distribution in the case of whites and, especially, Indians/Asians. The concentration curves for women of these groups fall above the diagonal at the bottom (Figures 8c–d). However, the bottom has a different meaning for these two groups in terms of average income; it is equivalent to the set of occupations at the middle range of income for the other groups. There are only marginal proportions of whites and Indians/Asians of any gender in occupations with average incomes below 50 per cent of the median.

Figure 7: Concentration (low-pay segregation) curves

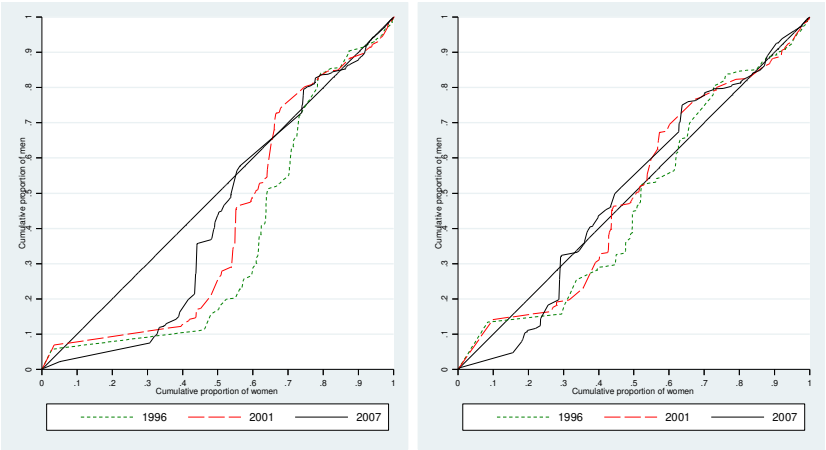
a. Unconditional, 1996–2007 b. Conditional, 1996–2007 c. Both, 2007



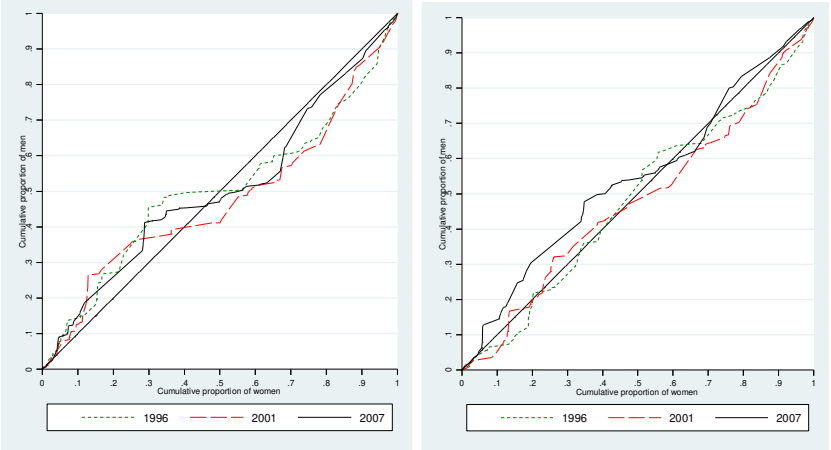
Source: Own construction based on IPUMS-International.

Figure 8: Concentration (low-pay segregation) curves by population groups

a. Black b. Coloured



c. White d. Indian/Asian



Note: Unconditional curves for women compared with men of the same population group.

Source: Own construction based on IPUMS-International.

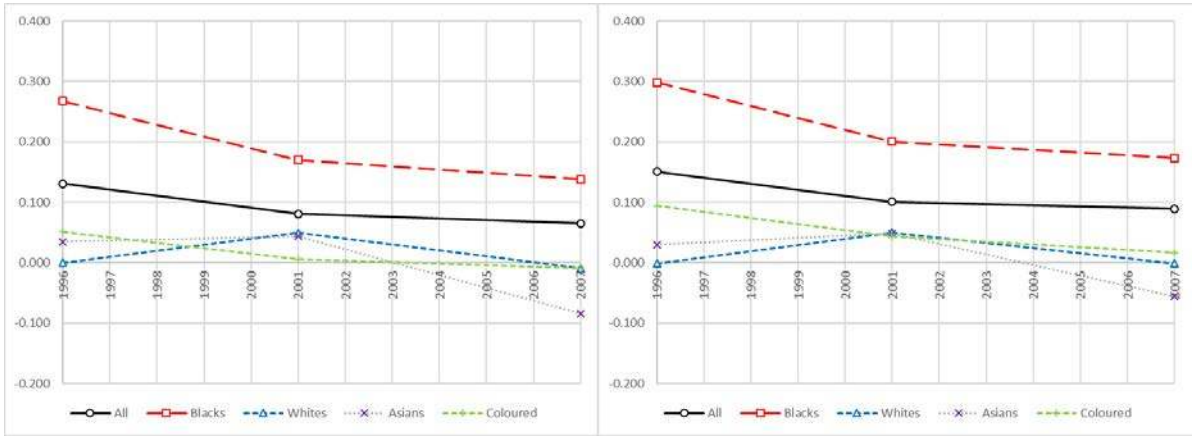
The concentration curves of the different years overlap, but there is some reduction in the stratification of women (and of blacks) at the very bottom of the distribution between 1996 and

2001 at the country level, but an increase between that year and 2007.[11] For the rest of the distribution of occupations, however, the concentration curve gets close to the equality line. Therefore, to draw a conclusion on the overall trends, we must rely on the indices of concentration that aggregate these contradictory changes.

The Gini measure of concentration exhibits positive values, indicating that, overall, if we consider any possible low-pay threshold, there is stratification by gender, with women segregated into relatively low-paying occupations, but with a clear downward trend over time (around 50 per cent reduction with Gini; Figure 9a). However, due to the changes in the concentration curves above, had we relied on indices more sensitive to the very bottom of the distribution, stratification would have increased between 1996 and 2007 (e.g. computing the Gini for a restricted range of low-paying occupations).

Figure 9: Gini concentration (low-pay segregation) index for women (census)

a. Unconditional b. Conditional



Source: Own construction based on IPUMS-International (3-digit classification).

Thus, the labour market is not only less segregated by gender, but also the remaining segregation implies in general less stratification (except for the bottom): the low-pay segregation Gini ratio went down from 19 per cent in 1996 to 12 per cent in 2007 (in contrast with the increase from 90 to 95 per cent over the same period in the case of race).[12,13] The reduction in stratification between 2001 and 2007, unlike that in 1996 compared with either 2001 or 2007, is not robust to the removal

[11] This is, however, the result of a slight change. The worst-paying occupation with a sizeable number of workers in 2001 was a male-dominated one, 921 (Agricultural, fishery and related labourers). It was followed by two largely female-dominated occupations: 913 (Domestic and related helpers, cleaners and launderers) and 911 (Street vendors and related workers)—with an integrated one, 614 (Forestry and related workers), in the middle. In 2007, the worst-paying significant occupations were all female-dominated, such as 621 (Subsistence agricultural and fishery workers), and the above-mentioned 913 and 921 (there is men overrepresentation in 912 (Shoe cleaning and other street services), but much smaller).

[12] The dissimilarity ratio, instead, was rather constant: 44 per cent in 1996, 41 per cent in 2001, and 44 per cent again in 2007. This results from the fact that the main improvement in terms of stratification did not occur at the bottom of the earnings distribution, where the largest gap between both cumulative distributions (i.e. the dissimilarity index) was obtained.

[13] If we disregard comparability issues, this means that occupations are more segregated and to a larger degree stratified in the USA than in South Africa (Gradín 2017a), although the figures are much closer if we restrict the analysis to black South Africans. In 2007 segregation in the USA was 0.682 (Gini) and 0.512 (dissimilarity); concentration was 0.204 (Gini) and 0.200 (dissimilarity), that is, respectively 30 per cent and 39 per cent.

from the sample of the category of workers with unknown occupation or the change by gender in the share of that category over time (see Table 7).[14]

Table 7: Robustness in the evolution of concentration (low-pay segregation) indices

	Gini			Dissimilarity		
	1996	2001	2007	1996	2001	2007
Base scenario: Unknown as one occupation	0.131	0.081	0.065	0.229	0.193	0.175
Alternative 1: Unknown removed	0.149	0.106	0.106	0.241	0.208	0.214
Alternative 3: Unknown split into two segregated occupations	0.174	0.117	0.103	0.229	0.193	0.175

Source: Own construction based on IPUMS-International.

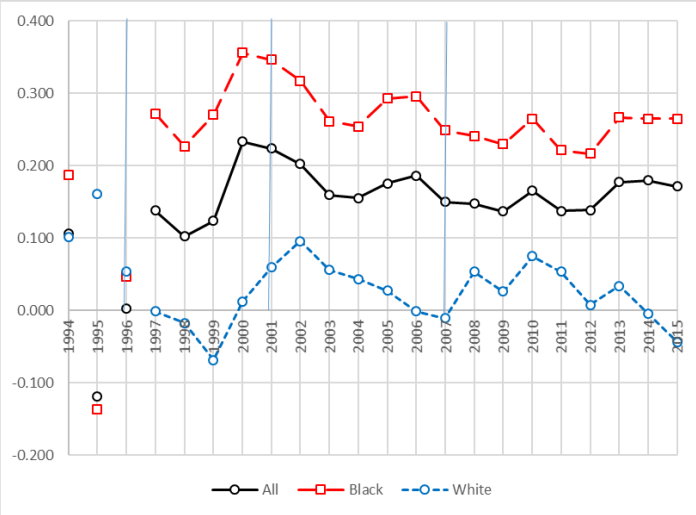
Overall, the distribution of occupations seems to be only strongly stratified in the case of black women compared with men of their own population group; it is roughly neutral for Coloureds and whites (the concentration Gini index is around zero), while Indian/Asian women tend to be more clearly segregated into high-paying occupations (the low-pay index is negative). The areas between the concentration curve and the diagonal falling above and below the latter cancel out for whites and Coloureds, but their situation is different (as revealed in Figure 7). While Coloured women tend to be overrepresented at the bottom, this is compensated for by a higher overrepresentation in the middle. In the case of whites, it is men who are overrepresented at the bottom (which is equivalent to the middle for Coloureds or blacks), but this is compensated for by their overrepresentation in occupations with higher earnings. This means that Coloured women are segregated in low-paying occupations along with black women if we restrict the measure to the bottom 30 per cent of women in the worst-paying occupations. The value of Gini would be positive (0.041), although still below the corresponding value for blacks (0.066) and in contrast with the negative levels obtained for whites (-0.030) and Indians/Asians (-0.039) in that case.

The trends over time of these population groups also differ. Black and Coloured women improved their situation over time, especially between 1996 and 2001. For example, the concentration Gini ratios for blacks went down from 38 per cent of segregation in 1996 to 24 per cent in 2007, and for Coloureds from 8 per cent to 2 per cent. Between 1996 and 2001, white women exhibited an increase in their low-pay segregation (from nearly zero), Indians/Asians a smaller increase. Between 2001 and 2007 these two groups reduced their low-pay segregation, with Indians/Asians becoming more clearly segregated into high-paying jobs (about 19 per cent of segregation is of this type).

The trend with LFS (Figure 10) shows an increase of women's Gini low-pay segregation between 1994 and 2000 (excluding the outlier 1995 observation displaying negative values), which might be explained by the data issues in the LFS during the first years discussed above. It also shows an (oscillating) decline since 2000 (consistent with the 2001–07 reduction observed in the census). This generally reflects the trend for blacks, but not for whites. The latter exhibited a decline in low-pay segregation until 1999, followed by an increase until 2002, and another decline afterwards, becoming negative in the last two years (which implies high-pay segregation). In the case of the dissimilarity index, low-pay segregation also shows a long-term decline (between 2000 and 2009) followed by stagnation in most recent years.

[14] Similarly, the dissimilarity index shows a smaller reduction (about 24 per cent) between 1996 and 2007, the reduction between 2001 and 2007 also not being robust to the assumption made about workers with unknown occupation.

Figure 10: Gini concentration (low-pay segregation) index for women (LFS)



Source: Own construction based on PALMS.

Differences in characteristics taken together do not explain why South African women tend to be overrepresented in low-paying occupations. In fact, with similar characteristics by gender, we would expect to observe a level of stratification about 37 per cent higher with the Gini index in the case of the 2007 Community Survey (compared with 16 per cent and 25 per cent in the previous years).[15] Table 8 reports the detailed decomposition for Gini (see Table A13 in the Appendix for dissimilarity). This proportion is smaller in the LFS (12 per cent in 2007, 18 per cent in 2015, Figure 11). Figure 7c suggests that there are only minor changes in the concentration curves after conditioning on characteristics. The area below the diagonal increases, while the area above decreases. That is, only part of the overrepresentation of women in middle-/high-paying occupations can be explained by their characteristics, but neither their large overrepresentation at the bottom nor their underrepresentation in some top occupations.

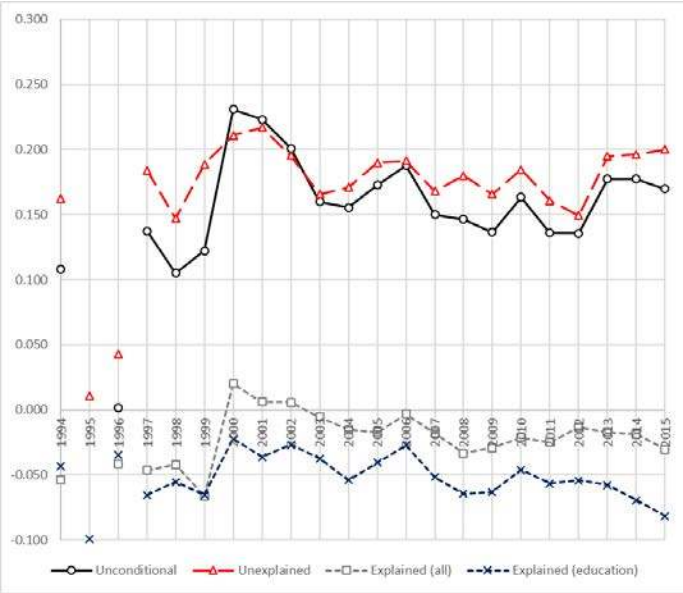
The different distribution of men and women by marital status (with a lower proportion of married women compared with men) increasingly explains significant proportions of women's low-pay segregation (Gini index: 16 per cent in 1996, 36 per cent in 2007). An additional 8 per cent can be explained in 2007 by the larger proportion of women living in rural areas (as opposed to a negative contribution in the other years, when the proportion of working women living in urban areas was higher than for men). But these effects are more than compensated for by a much stronger and increasing negative impact of education (-21 per cent in 1996, -83 per cent in 2007) which prevents women from being even more segregated into low-pay occupations. The LFS show an increasing (negative) contribution of education over time since 2000 (Figure 11; detailed decomposition shown in Table A14 in the Appendix).

This is also the situation of black women. Their characteristics in 2007 prevented low-pay segregation from being higher (an effect of -26 per cent), especially due to education (-42 per cent), more than compensating for the positive effects of marital status (10 per cent), age (5 per cent), or area of residence (2 per cent). All the high-pay segregation of whites and Coloureds, and one-third of that of Indians/Asians can be explained by their women's distinct characteristics, education being the most important. Coloured women would in fact be segregated into low-paying occupations if they had men's characteristics. These facts indicate that education has become an

[15] Stratification would be about 28 per cent higher with the alternative counterfactual in which I give women the male conditional distribution across occupations.

effective way for women of all population groups (especially non-whites) to scale up in the pay distribution, compensating for their disadvantaged situation with respect to men.[16]

Figure 11: Gini concentration (low-pay segregation) index for women (LFS): explained and unexplained components



Source: Own construction based on PALMS.

[16] The effect of education might be overestimated given the lack of information about field of college degree, as women tend to specialize in fields with lower average earnings (see Gradín 2017a for the USA). However, the impact would be smaller in South Africa, as only 9 per cent of women and 7 per cent of men had a university degree in 2007. The advantage of women is larger in secondary education (42 per cent versus 38 per cent).

Table 8: Gini concentration (low-pay segregation) index for women (Census): decomposition

	1996					2001					2007				
	All	Black	White	Coloured	Indian/ Asian	All	Black	White	Coloured	Indian/ Asian	All	Black	White	Coloured	Indian/ Asian
Unconditional	0.130	0.267	0.000	0.051	0.035	0.081	0.170	0.049	0.006	0.044	0.065	0.138	-0.009	-0.009	-0.085
	(0.001)	(0.002)	(0.003)	(0.003)	(0.007)	(0.002)	(0.002)	(0.003)	(0.004)	(0.007)	(0.003)	(0.003)	(0.007)	(0.007)	(0.014)
%Ratio	19.3	37.5	0.0	7.7	6.7	12.8	25.5	3.0	1.0	8.5	11.8	23.6	-0.5	-1.7	-18.6
Unexplained	0.151	0.298	-0.001	0.094	0.030	0.101	0.200	0.050	0.043	0.048	0.090	0.173	-0.001	0.017	-0.056
	(0.001)	(0.002)	(0.003)	(0.003)	(0.006)	(0.001)	(0.002)	(0.003)	(0.003)	(0.006)	(0.002)	(0.003)	(0.007)	(0.007)	(0.013)
Explained	-0.020	-0.031	0.001	-0.043	0.005	-0.020	-0.030	-0.001	-0.037	-0.004	-0.024	-0.036	-0.008	-0.026	-0.029
	(0.001)	(0.001)	(0.001)	(0.003)	(0.004)	(0.001)	(0.001)	(0.001)	(0.003)	(0.004)	(0.002)	(0.002)	(0.002)	(0.005)	(0.007)
Area	-0.011	-0.004	-0.004	-0.017	-0.002	-0.008	-0.004	-0.003	-0.013	-0.002	0.006	0.003	-0.001	-0.004	-0.003
	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)	(0.000)	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)	(0.002)	(0.001)
Province	-0.001	-0.006	-0.002	-0.006	-0.002	0.000	-0.003	-0.003	-0.006	-0.002	0.000	-0.001	-0.001	-0.002	-0.002
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)
Education	-0.027	-0.034	0.003	-0.016	0.020	-0.039	-0.045	0.002	-0.016	-0.005	-0.054	-0.057	-0.004	-0.028	-0.027
	(0.001)	(0.001)	(0.001)	(0.003)	(0.004)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.004)	(0.006)
Age	-0.003	-0.001	0.004	-0.008	-0.027	0.001	0.007	0.003	-0.005	-0.014	0.002	0.008	0.001	-0.001	-0.008
	(0.000)	(0.000)	(0.001)	(0.001)	(0.003)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)	(0.000)	(0.001)	(0.001)	(0.001)	(0.004)
Race	0.000					-0.002					-0.002				
	(0.001)					(0.001)					(0.001)				
Marital	0.021	0.016	0.001	0.002	0.015	0.027	0.016	0.000	0.002	0.017	0.023	0.013	-0.002	0.009	0.010
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)
Disability	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Immigration	-0.001	-0.004	0.000	0.000	0.001	0.001	-0.001	0.001	0.000	0.003	0.002	-0.001	0.000	0.001	0.002
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)

Note: Bootstrap standard errors (200 replications) showed below in parentheses.

Source: Own construction based on IPUMS-International.

8 Concluding remarks

In this paper, I have analysed gender inequalities in the distribution of occupations in post-apartheid South Africa, making the most of the limited and often problematic available data sources: the census and a series linking different labour force surveys. Although South Africa is a very special case due to its complexity in terms of history and demographics, this analysis also contributes to the understanding of segregation in developing countries, for which the research on the matter is much scarcer.

The analysis mostly relied on census data to assess the long-term trend and found a substantial decline in the level of segregation and stratification of occupations by gender. Gender segregation has, however, been shown to be more persistent in recent years, and to a lesser extent also stratification, using the LFS. This trend contrasts with a relative lack of progress in terms of racial segregation/stratification over the same period. Race and gender, however, interplay in determining the composition of employment. Stratification by gender implies that some women (especially black and Coloured) persistently hold lower-paying jobs, like domestic helpers or cleaners, while other women (especially Indian/Asian, white and Coloured) increasingly fill higher paying positions, especially in professional jobs, but are less successful in reaching managerial positions.

I have found no evidence that this segregation and stratification by gender, now or in the past, were the result of the distinctive characteristics of male and female workers, especially attained education. Hardly any segregation can be justified on these terms, and only the overrepresentation of women in some higher-paying professional positions may partially be justified by their higher education and other attributes. But this is not the case with their overrepresentation at the bottom of the pay scale or their underrepresentation in managerial jobs, which remains after controlling for differences in characteristics by gender. That is, men and women with similar characteristics still tend to work in different occupations, with a tendency for some (black and Coloured) women to work in lower-paying jobs compared with men of similar human capital. Women outperforming men in education, however, is revealed to be the most effective way out of being trapped in low-paying jobs, especially for whites and Indians/Asians, but also for Coloureds, allowing them to achieve professional occupations, even if they are kept away from the jobs with the highest responsibilities.

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Appendix

Table A1: Occupational gender segregation (All)

	Segregation indices						Concentration indices and ratios											
	Gini			Dissimilarity			Gini						Dissimilarity					
Digits	1	2	3	1	2	3	1	ratio	2	ratio	3	ratio	1	ratio	2	ratio	3	ratio
1994	0.361	0.617	0.730	0.291	0.476	0.576	0.001	0.2	0.031	5.0	0.107	14.6	-0.148	-50.7	0.136	28.5	0.172	29.9
1995	0.454	0.583	0.689	0.337	0.437	0.541	-0.195	-42.9	-0.146	-25.0	-0.119	-17.2	-0.277	-82.1	-0.193	-44.2	-0.152	-28.1
1996	0.379	0.576	0.677	0.304	0.446	0.528	-0.011	-2.9	0.043	7.5	0.003	0.5	-0.157	-51.8	0.166	37.2	-0.129	-24.4
1997	0.414	0.598	0.692	0.338	0.464	0.527	0.000	0.1	0.085	14.2	0.138	20.0	-0.143	-42.3	0.206	44.4	0.221	41.9
1998	0.444	0.627	0.729	0.362	0.470	0.565	0.038	8.5	0.066	10.6	0.102	14.1	0.150	41.3	0.216	45.9	0.245	43.3
1999	0.444	0.636	0.731	0.365	0.479	0.568	-0.002	-0.4	0.099	15.5	0.124	16.9	-0.152	-41.5	0.224	46.8	0.233	40.9
2000	0.414	0.601	0.701	0.323	0.451	0.542	0.151	36.4	0.196	32.6	0.233	33.3	0.212	65.6	0.276	61.2	0.308	56.9
2001	0.422	0.612	0.713	0.336	0.462	0.558	0.154	36.5	0.184	30.0	0.224	31.4	0.192	57.0	0.242	52.4	0.287	51.5
2002	0.418	0.601	0.704	0.327	0.453	0.542	0.095	22.8	0.160	26.7	0.202	28.7	0.175	53.6	0.237	52.2	0.275	50.8
2003	0.394	0.604	0.699	0.310	0.453	0.545	0.113	28.6	0.148	24.6	0.159	22.8	0.163	52.6	0.215	47.5	0.259	47.6
2004	0.397	0.602	0.701	0.314	0.455	0.543	0.093	23.5	0.130	21.6	0.155	22.2	0.149	47.4	0.207	45.4	0.241	44.4
2005	0.393	0.596	0.694	0.308	0.456	0.539	0.092	23.4	0.141	23.7	0.175	25.3	0.156	50.7	0.224	49.1	0.262	48.5
2006	0.383	0.588	0.691	0.303	0.442	0.529	0.101	26.5	0.174	29.5	0.186	27.0	0.162	53.5	0.219	49.6	0.281	53.1
2007	0.381	0.580	0.675	0.294	0.439	0.524	0.065	17.1	0.114	19.6	0.150	22.3	-0.130	-44.4	0.209	47.5	0.264	50.4
2008	0.392	0.592	0.698	0.314	0.452	0.542	0.077	19.5	0.117	19.7	0.148	21.2	0.146	46.5	0.203	44.9	0.254	46.9
2009	0.398	0.588	0.695	0.316	0.445	0.535	0.077	19.4	0.108	18.3	0.137	19.7	0.146	46.1	0.182	40.8	0.241	45.0
2010	0.402	0.583	0.695	0.310	0.433	0.535	0.069	17.3	0.107	18.3	0.166	23.8	0.141	45.4	0.168	38.9	0.250	46.8
2011	0.400	0.576	0.686	0.304	0.429	0.524	0.069	17.1	0.096	16.6	0.138	20.1	0.133	43.7	0.169	39.4	0.250	47.7
2012	0.403	0.584	0.684	0.308	0.434	0.518	0.077	19.1	0.087	14.9	0.139	20.3	0.143	46.2	0.175	40.2	0.247	47.6
2013	0.402	0.572	0.686	0.312	0.432	0.524	0.074	18.5	0.124	21.6	0.177	25.9	0.144	46.0	0.200	46.3	0.247	47.2
2014	0.396	0.567	0.679	0.309	0.429	0.521	0.069	17.3	0.116	20.5	0.180	26.5	0.140	45.4	0.198	46.2	0.253	48.6
2015	0.408	0.581	0.690	0.320	0.441	0.527	0.054	13.3	0.109	18.8	0.172	24.9	-0.139	-43.3	0.200	45.3	0.247	46.9

Source: Own construction based on PALMS.

Table A2: Occupational segregation by gender, standard errors (All)

	Segregation						Concentration					
	Gini			Dissimilarity			Gini			Dissimilarity		
Digits	1	2	3	1	2	3	1	2	3	1	2	3
1994	0.007	0.006	0.005	0.006	0.005	0.005	0.009	0.009	0.008	0.007	0.007	0.004
1995	0.007	0.007	0.006	0.007	0.007	0.006	0.009	0.008	0.008	0.007	0.007	0.005
1996	0.011	0.009	0.007	0.010	0.009	0.007	0.012	0.012	0.012	0.052	0.008	0.036
1997	0.007	0.006	0.006	0.006	0.006	0.006	0.008	0.009	0.009	0.079	0.006	0.006
1998	0.009	0.008	0.006	0.008	0.009	0.007	0.011	0.011	0.011	0.095	0.008	0.008
1999	0.008	0.006	0.005	0.007	0.007	0.006	0.010	0.010	0.010	0.139	0.007	0.006
2000	0.007	0.006	0.005	0.006	0.006	0.005	0.008	0.008	0.008	0.006	0.006	0.006
2001	0.005	0.004	0.004	0.005	0.004	0.004	0.007	0.006	0.007	0.005	0.005	0.005
2002	0.005	0.005	0.004	0.005	0.005	0.004	0.006	0.006	0.006	0.005	0.005	0.005
2003	0.005	0.005	0.004	0.004	0.005	0.004	0.006	0.006	0.006	0.005	0.005	0.005
2004	0.006	0.006	0.005	0.005	0.005	0.005	0.007	0.007	0.007	0.006	0.005	0.005
2005	0.006	0.005	0.005	0.005	0.005	0.005	0.008	0.008	0.008	0.006	0.006	0.006
2006	0.006	0.005	0.005	0.005	0.005	0.005	0.008	0.008	0.008	0.006	0.005	0.006
2007	0.009	0.007	0.006	0.008	0.007	0.007	0.011	0.011	0.011	0.137	0.007	0.007
2008	0.004	0.004	0.003	0.004	0.004	0.003	0.004	0.004	0.004	0.004	0.003	0.003
2009	0.004	0.003	0.003	0.004	0.004	0.003	0.004	0.004	0.005	0.020	0.004	0.004
2010	0.004	0.004	0.003	0.004	0.004	0.003	0.005	0.005	0.005	0.039	0.004	0.004
2011	0.004	0.004	0.003	0.004	0.004	0.003	0.005	0.005	0.005	0.088	0.004	0.004
2012	0.004	0.004	0.003	0.004	0.004	0.004	0.005	0.005	0.005	0.004	0.003	0.004
2013	0.005	0.004	0.003	0.004	0.004	0.003	0.005	0.005	0.005	0.004	0.003	0.004
2014	0.004	0.003	0.003	0.003	0.003	0.003	0.005	0.005	0.005	0.004	0.003	0.004
2015	0.004	0.003	0.003	0.003	0.003	0.003	0.005	0.005	0.005	0.105	0.003	0.004

Source: Own construction based on PALMS.

Table A3: Occupational gender segregation (Blacks)

	Segregation indices						Concentration indices and ratios											
	Gini			Dissimilarity			Gini						Dissimilarity					
Digits	1	2	3	1	2	3	1	%ratio	2	%ratio	3	%ratio	1	%ratio	2	%ratio	3	%ratio
1994	0.315	0.656	0.761	0.261	0.504	0.604	0.061	19.4	0.051	7.7	0.187	24.6	0.136	52.1	0.205	40.7	0.253	41.9
1995	0.408	0.572	0.675	0.292	0.420	0.525	-0.179	-43.9	-0.161	-28.2	-0.137	-20.3	-0.236	-81.1	-0.179	-42.5	-0.178	-33.9
1996	0.394	0.620	0.714	0.332	0.485	0.566	0.082	20.7	0.136	21.9	0.046	6.5	0.210	63.4	0.268	55.2	0.185	32.6
1997	0.429	0.648	0.735	0.373	0.513	0.582	0.089	20.6	0.197	30.3	0.272	37.0	0.217	58.2	0.316	61.5	0.330	56.6
1998	0.455	0.658	0.755	0.382	0.498	0.592	0.158	34.7	0.184	28.0	0.227	30.1	0.240	62.8	0.326	65.3	0.355	60.0
1999	0.480	0.686	0.769	0.418	0.515	0.601	0.089	18.6	0.224	32.6	0.270	35.2	0.237	56.7	0.335	65.1	0.347	57.8
2000	0.415	0.621	0.715	0.330	0.475	0.560	0.252	60.8	0.313	50.4	0.356	49.8	0.289	87.7	0.369	77.7	0.404	72.1
2001	0.424	0.632	0.733	0.338	0.480	0.579	0.261	61.6	0.291	46.0	0.347	47.3	0.264	78.1	0.331	68.9	0.384	66.4
2002	0.427	0.628	0.725	0.335	0.482	0.562	0.187	43.7	0.270	42.9	0.317	43.8	0.250	74.5	0.332	68.8	0.369	65.7
2003	0.384	0.631	0.725	0.320	0.482	0.572	0.206	53.7	0.253	40.0	0.262	36.1	0.237	74.0	0.305	63.3	0.354	62.0
2004	0.386	0.633	0.729	0.320	0.488	0.575	0.180	46.6	0.213	33.7	0.254	34.8	0.216	67.6	0.290	59.4	0.334	58.0
2005	0.379	0.622	0.714	0.311	0.482	0.564	0.190	50.2	0.239	38.5	0.293	41.0	0.225	72.5	0.316	65.5	0.361	63.9
2006	0.370	0.617	0.716	0.305	0.466	0.562	0.195	52.7	0.277	44.9	0.296	41.3	0.228	74.7	0.301	64.5	0.372	66.2
2007	0.365	0.597	0.690	0.301	0.458	0.546	0.146	40.0	0.199	33.3	0.249	36.1	0.191	63.7	0.285	62.2	0.345	63.1
2008	0.373	0.619	0.723	0.317	0.469	0.572	0.145	38.9	0.189	30.6	0.241	33.3	0.203	64.0	0.271	57.8	0.331	57.8
2009	0.375	0.604	0.708	0.317	0.459	0.554	0.153	40.8	0.186	30.8	0.230	32.4	0.209	65.8	0.251	54.8	0.313	56.5
2010	0.385	0.608	0.721	0.312	0.451	0.563	0.138	35.9	0.172	28.3	0.265	36.7	0.192	61.6	0.233	51.7	0.324	57.7
2011	0.386	0.593	0.709	0.310	0.441	0.550	0.133	34.4	0.156	26.3	0.221	31.2	0.186	60.0	0.230	52.2	0.322	58.6
2012	0.392	0.601	0.702	0.317	0.444	0.542	0.135	34.5	0.148	24.7	0.217	30.9	0.192	60.7	0.232	52.2	0.311	57.5
2013	0.389	0.587	0.703	0.319	0.441	0.547	0.127	32.5	0.196	33.3	0.267	38.0	0.188	59.0	0.261	59.3	0.308	56.4
2014	0.381	0.581	0.693	0.312	0.437	0.542	0.118	31.1	0.187	32.2	0.265	38.2	0.182	58.3	0.255	58.2	0.314	57.9
2015	0.391	0.589	0.701	0.318	0.444	0.543	0.107	27.3	0.185	31.3	0.265	37.8	0.173	54.5	0.255	57.5	0.305	56.1

Source: Own construction based on PALMS.

Table A4: Occupational gender segregation (Whites)

	Segregation indices						Concentration indices and ratios											
	Gini			Dissimilarity			Gini						Dissimilarity					
Digits	1	2	3	1	2	3	1	%ratio	2	%ratio	3	%ratio	1	%ratio	2	%ratio	3	%ratio
1994	0.575	0.661	0.748	0.425	0.518	0.588	-0.053	-9.2	0.105	15.9	0.102	13.6	-0.286	-67.1	0.217	41.9	0.200	34.0
1995	0.633	0.718	0.794	0.455	0.573	0.625	-0.059	-9.4	0.144	20.0	0.160	20.2	-0.322	-70.8	0.255	44.5	0.235	37.6
1996	0.479	0.596	0.706	0.344	0.451	0.553	-0.064	-13.3	0.044	7.3	0.054	7.6	-0.245	-71.3	-0.156	-34.7	0.175	31.6
1997	0.493	0.575	0.660	0.343	0.432	0.485	-0.062	-12.5	-0.012	-2.1	-0.001	-0.2	-0.247	-72.0	-0.163	-37.7	-0.181	-37.4
1998	0.545	0.645	0.731	0.391	0.483	0.561	-0.058	-10.7	-0.020	-3.1	-0.017	-2.4	-0.208	-53.1	-0.111	-22.9	-0.140	-25.0
1999	0.471	0.580	0.689	0.325	0.428	0.527	-0.039	-8.2	0.020	3.5	-0.068	-9.9	-0.204	-62.7	-0.123	-28.6	-0.171	-32.4
2000	0.536	0.622	0.708	0.380	0.456	0.530	-0.031	-5.9	0.008	1.3	0.013	1.8	-0.246	-64.6	-0.166	-36.4	-0.191	-36.1
2001	0.553	0.641	0.711	0.395	0.491	0.542	0.030	5.4	0.050	7.8	0.060	8.4	-0.236	-59.7	0.155	31.6	-0.180	-33.2
2002	0.509	0.624	0.701	0.372	0.473	0.536	0.014	2.7	0.069	11.0	0.096	13.6	-0.211	-56.7	0.167	35.3	0.216	40.3
2003	0.520	0.616	0.679	0.378	0.464	0.521	0.052	10.1	0.046	7.5	0.056	8.2	-0.207	-54.7	-0.137	-29.6	-0.162	-31.1
2004	0.503	0.593	0.672	0.375	0.450	0.514	0.038	7.6	0.052	8.7	0.044	6.5	-0.210	-56.0	0.184	40.8	-0.160	-31.1
2005	0.516	0.609	0.689	0.377	0.463	0.524	-0.021	-4.0	0.032	5.3	0.028	4.0	-0.227	-60.3	-0.186	-40.2	-0.187	-35.6
2006	0.498	0.587	0.677	0.351	0.436	0.510	-0.021	-4.1	-0.001	-0.2	-0.001	-0.2	-0.243	-69.3	-0.183	-42.0	-0.177	-34.6
2007	0.511	0.606	0.674	0.373	0.454	0.507	-0.016	-3.2	-0.010	-1.7	-0.011	-1.6	-0.252	-67.5	-0.206	-45.4	-0.192	-37.8
2008	0.512	0.594	0.668	0.382	0.451	0.498	0.078	15.3	0.079	13.3	0.053	8.0	-0.194	-50.7	0.149	33.0	0.152	30.5
2009	0.536	0.622	0.690	0.373	0.467	0.509	0.058	10.8	0.043	6.8	0.026	3.8	-0.226	-60.6	-0.162	-34.6	-0.161	-31.6
2010	0.498	0.586	0.659	0.357	0.430	0.490	0.045	9.0	0.095	16.3	0.075	11.3	-0.192	-53.8	0.183	42.6	0.124	25.2
2011	0.487	0.591	0.659	0.348	0.443	0.483	0.042	8.6	0.090	15.2	0.054	8.1	-0.181	-52.0	0.156	35.2	0.132	27.3
2012	0.487	0.596	0.674	0.349	0.441	0.493	0.026	5.4	0.011	1.9	0.008	1.2	-0.200	-57.4	-0.154	-35.0	-0.157	-31.9
2013	0.497	0.607	0.682	0.364	0.448	0.504	0.042	8.4	0.048	7.9	0.034	5.0	-0.190	-52.1	-0.141	-31.5	-0.141	-28.0
2014	0.496	0.595	0.684	0.356	0.436	0.511	0.013	2.6	-0.007	-1.2	-0.004	-0.6	-0.203	-57.1	-0.166	-38.2	-0.138	-27.0
2015	0.520	0.631	0.693	0.373	0.471	0.508	-0.017	-3.4	-0.042	-6.6	-0.043	-6.3	-0.226	-60.6	-0.184	-39.0	-0.169	-33.4

Source: Own construction based on PALMS.

Table A5: Occupational gender segregation (Coloureds)

	Segregation indices						Concentration indices and ratios											
	Gini			Dissimilarity			Gini						Dissimilarity					
Digits	1	2	3	1	2	3	1	%ratio	2	%ratio	3	%ratio	1	%ratio	2	%ratio	3	%ratio
1994	0.357	0.553	0.707	0.267	0.409	0.520	0.034	9.4	0.065	11.8	0.132	18.6	-0.111	-41.7	0.115	28.2	0.151	29.0
1995	0.366	0.528	0.695	0.256	0.397	0.547	-0.076	-20.9	-0.067	-12.8	-0.047	-6.8	-0.155	-60.5	-0.122	-30.8	-0.151	-27.6
1996	0.310	0.545	0.707	0.224	0.403	0.542	-0.036	-11.6	-0.014	-2.5	-0.025	-3.5	-0.164	-73.1	-0.088	-21.9	-0.145	-26.7
1997	0.325	0.518	0.661	0.255	0.365	0.491	-0.056	-17.3	0.010	2.0	0.062	9.4	-0.143	-56.1	0.103	28.1	0.130	26.5
1998	0.374	0.563	0.712	0.289	0.401	0.532	-0.029	-7.9	0.010	1.7	0.047	6.6	-0.139	-48.2	0.127	31.7	0.154	29.1
1999	0.367	0.608	0.720	0.299	0.461	0.564	-0.018	-5.0	0.056	9.2	0.084	11.6	-0.116	-38.8	0.131	28.4	0.183	32.4
2000	0.409	0.607	0.733	0.316	0.446	0.569	-0.014	-3.3	0.015	2.5	0.075	10.2	-0.143	-45.2	0.118	26.4	0.158	27.8
2001	0.364	0.592	0.717	0.283	0.448	0.562	0.010	2.8	0.040	6.8	0.068	9.5	-0.133	-47.0	0.117	26.2	0.145	25.8
2002	0.366	0.561	0.721	0.279	0.418	0.559	-0.031	-8.5	0.006	1.0	0.049	6.8	-0.141	-50.6	-0.095	-22.8	0.137	24.6
2003	0.353	0.581	0.711	0.260	0.439	0.555	0.001	0.2	0.037	6.4	0.029	4.1	-0.137	-52.5	-0.092	-20.9	0.123	22.1
2004	0.376	0.574	0.691	0.290	0.431	0.529	0.010	2.8	0.044	7.7	0.059	8.5	-0.147	-50.6	0.104	24.1	0.168	31.8
2005	0.381	0.567	0.713	0.290	0.435	0.546	-0.020	-5.3	0.038	6.7	0.054	7.6	-0.163	-56.0	0.104	23.9	0.151	27.7
2006	0.381	0.563	0.704	0.305	0.407	0.547	0.002	0.6	0.092	16.3	0.082	11.6	-0.152	-50.0	0.136	33.4	0.172	31.4
2007	0.334	0.573	0.720	0.254	0.420	0.547	-0.028	-8.5	0.042	7.3	0.074	10.3	-0.159	-62.5	0.104	24.9	0.179	32.8
2008	0.364	0.534	0.664	0.277	0.401	0.501	-0.015	-4.2	0.042	7.9	0.056	8.4	-0.161	-58.2	0.108	27.0	0.165	33.0
2009	0.386	0.579	0.711	0.284	0.447	0.550	-0.031	-8.0	0.025	4.3	0.039	5.5	-0.169	-59.7	-0.099	-22.1	0.169	30.7
2010	0.380	0.544	0.697	0.285	0.400	0.529	0.001	0.3	0.054	10.0	0.101	14.5	-0.153	-53.6	0.120	30.0	0.202	38.2
2011	0.340	0.522	0.669	0.250	0.385	0.505	-0.019	-5.5	0.016	3.1	0.055	8.3	-0.156	-62.7	-0.094	-24.5	0.172	34.1
2012	0.355	0.546	0.685	0.268	0.407	0.515	0.003	0.8	0.014	2.6	0.061	9.0	-0.144	-53.5	0.092	22.6	0.182	35.3
2013	0.371	0.528	0.690	0.266	0.391	0.523	-0.018	-4.8	0.031	5.9	0.098	14.2	-0.156	-58.5	0.115	29.4	0.185	35.5
2014	0.387	0.541	0.691	0.270	0.409	0.528	-0.031	-7.9	0.011	2.0	0.084	12.1	-0.160	-59.3	0.117	28.6	0.165	31.2
2015	0.418	0.571	0.718	0.297	0.434	0.543	-0.028	-6.7	0.033	5.8	0.097	13.5	-0.174	-58.7	0.139	32.0	0.197	36.3

Source: Own construction based on PALMS.

Table A6: Occupational gender segregation (Indians/Asians)

	Segregation indices						Concentration indices and ratios											
	Gini			Dissimilarity			Gini						Dissimilarity					
Digits	1	2	3	1	2	3	1	%ratio	2	%ratio	3	%ratio	1	%ratio	2	%ratio	3	%ratio
1994	0.291	0.469	0.624	0.194	0.341	0.465	-0.006	-2.1	0.072	15.3	0.102	16.3	-0.115	-59.3	0.126	36.9	0.124	26.7
1995	0.386	0.526	0.683	0.288	0.384	0.512	-0.102	-26.5	-0.013	-2.5	0.063	9.2	-0.226	-78.3	-0.113	-29.4	0.100	19.5
1996	0.272	0.408	0.630	0.199	0.289	0.470	-0.082	-30.0	0.005	1.1	0.033	5.2	-0.153	-76.8	-0.068	-23.4	0.127	27.0
1997	0.383	0.524	0.667	0.300	0.402	0.494	-0.022	-5.8	0.060	11.4	0.054	8.2	-0.123	-40.9	0.102	25.4	0.091	18.3
1998	0.393	0.649	0.802	0.326	0.523	0.650	-0.140	-35.6	-0.085	-13.2	-0.063	-7.9	-0.161	-49.5	-0.137	-26.3	-0.175	-26.9
1999	0.291	0.559	0.770	0.219	0.408	0.601	-0.053	-18.1	0.015	2.7	0.062	8.0	-0.125	-57.1	0.068	16.8	0.228	38.0
2000	0.423	0.534	0.689	0.334	0.401	0.528	-0.101	-23.8	-0.069	-12.8	-0.039	-5.7	-0.208	-62.1	-0.182	-45.5	-0.174	-33.0
2001	0.366	0.474	0.601	0.277	0.358	0.436	0.045	12.4	0.085	17.9	0.100	16.6	0.121	43.7	0.122	34.2	0.140	32.2
2002	0.372	0.480	0.607	0.277	0.355	0.464	0.031	8.3	0.077	16.2	0.099	16.3	0.117	42.4	0.131	36.9	0.157	33.8
2003	0.380	0.490	0.600	0.276	0.349	0.446	-0.027	-7.1	0.002	0.3	0.042	6.9	-0.166	-60.3	-0.133	-37.9	0.098	21.9
2004	0.356	0.519	0.630	0.250	0.382	0.459	0.075	21.1	0.149	28.7	0.142	22.5	0.164	65.4	0.161	42.0	0.157	34.2
2005	0.394	0.560	0.696	0.296	0.405	0.519	-0.037	-9.4	0.037	6.5	0.054	7.8	-0.190	-64.2	-0.090	-22.2	0.126	24.3
2006	0.399	0.564	0.663	0.302	0.443	0.501	0.012	3.0	0.070	12.4	0.062	9.3	-0.148	-48.9	0.115	25.9	0.130	26.0
2007	0.398	0.518	0.697	0.318	0.394	0.524	-0.023	-5.6	0.010	2.0	-0.006	-0.9	-0.198	-62.1	-0.136	-34.6	-0.173	-33.0
2008	0.430	0.529	0.651	0.322	0.371	0.487	0.003	0.8	0.034	6.5	0.027	4.1	-0.187	-58.1	0.098	26.5	-0.141	-29.0
2009	0.386	0.489	0.631	0.301	0.359	0.458	-0.058	-15.0	-0.033	-6.8	-0.030	-4.8	-0.207	-68.9	-0.143	-39.8	-0.173	-37.9
2010	0.406	0.517	0.645	0.306	0.386	0.473	-0.045	-11.1	0.013	2.5	-0.005	-0.8	-0.184	-60.2	0.110	28.5	-0.112	-23.6
2011	0.432	0.549	0.668	0.322	0.406	0.498	-0.039	-9.0	0.003	0.5	-0.015	-2.2	-0.197	-61.1	-0.132	-32.6	-0.121	-24.3
2012	0.419	0.544	0.659	0.313	0.386	0.477	0.035	8.3	0.041	7.6	0.019	2.9	-0.148	-47.4	0.099	25.6	0.100	20.9
2013	0.401	0.492	0.640	0.289	0.365	0.480	0.017	4.2	0.012	2.5	-0.012	-1.9	-0.147	-50.9	-0.092	-25.3	-0.110	-22.9
2014	0.424	0.501	0.624	0.318	0.381	0.472	-0.016	-3.9	0.003	0.7	0.009	1.4	-0.180	-56.6	0.130	34.2	-0.140	-29.7
2015	0.475	0.558	0.669	0.399	0.422	0.519	-0.131	-27.6	-0.125	-22.4	-0.134	-20.1	-0.258	-64.5	-0.199	-47.2	-0.197	-37.9

Source: Own construction based on PALMS.

Table A7: Occupational segregation by gender, standard errors (Blacks)

	Segregation						Concentration					
	Gini			Dissimilarity			Gini			Dissimilarity		
Digits	1	2	3	1	2	3	1	2	3	1	2	3
1994	0.009	0.008	0.007	0.008	0.008	0.008	0.010	0.011	0.011	0.009	0.009	0.006
1995	0.010	0.009	0.008	0.010	0.009	0.008	0.012	0.013	0.012	0.010	0.010	0.008
1996	0.013	0.011	0.009	0.012	0.011	0.011	0.014	0.015	0.014	0.012	0.011	0.051
1997	0.008	0.007	0.006	0.008	0.008	0.007	0.010	0.010	0.011	0.009	0.009	0.009
1998	0.011	0.009	0.008	0.010	0.010	0.009	0.012	0.012	0.012	0.010	0.010	0.010
1999	0.009	0.007	0.006	0.008	0.008	0.007	0.011	0.012	0.011	0.009	0.008	0.008
2000	0.008	0.007	0.006	0.007	0.007	0.006	0.009	0.009	0.009	0.007	0.007	0.007
2001	0.006	0.005	0.004	0.005	0.005	0.005	0.007	0.007	0.007	0.005	0.005	0.006
2002	0.006	0.005	0.004	0.005	0.005	0.005	0.007	0.007	0.007	0.006	0.005	0.005
2003	0.006	0.006	0.005	0.006	0.006	0.005	0.007	0.007	0.007	0.006	0.006	0.006
2004	0.007	0.007	0.005	0.006	0.007	0.006	0.009	0.009	0.009	0.007	0.007	0.007
2005	0.007	0.006	0.005	0.006	0.006	0.005	0.009	0.009	0.009	0.007	0.007	0.007
2006	0.008	0.006	0.005	0.006	0.006	0.006	0.009	0.008	0.009	0.007	0.007	0.007
2007	0.009	0.008	0.007	0.008	0.007	0.007	0.011	0.011	0.011	0.008	0.008	0.008
2008	0.004	0.004	0.003	0.004	0.004	0.004	0.005	0.005	0.005	0.004	0.004	0.004
2009	0.005	0.004	0.003	0.004	0.004	0.004	0.005	0.005	0.005	0.004	0.004	0.004
2010	0.005	0.004	0.004	0.004	0.004	0.004	0.006	0.006	0.006	0.005	0.005	0.005
2011	0.005	0.005	0.004	0.004	0.004	0.004	0.005	0.006	0.006	0.004	0.004	0.005
2012	0.005	0.004	0.004	0.004	0.004	0.004	0.006	0.006	0.006	0.005	0.005	0.005
2013	0.005	0.004	0.003	0.004	0.004	0.004	0.005	0.006	0.006	0.005	0.004	0.005
2014	0.005	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.004	0.004
2015	0.005	0.004	0.003	0.003	0.004	0.004	0.005	0.005	0.005	0.004	0.004	0.004

Source: Own construction based on PALMS.

Table A8: Occupational segregation by gender, standard errors (Whites)

	Segregation						Concentration					
	Gini			Dissimilarity			Gini			Dissimilarity		
Digits	1	2	3	1	2	3	1	2	3	1	2	3
1994	0.012	0.011	0.009	0.012	0.011	0.010	0.014	0.014	0.015	0.011	0.013	0.011
1995	0.013	0.012	0.010	0.015	0.014	0.012	0.017	0.017	0.017	0.013	0.016	0.013
1996	0.022	0.021	0.018	0.022	0.020	0.019	0.031	0.032	0.032	0.023	0.164	0.124
1997	0.019	0.017	0.015	0.017	0.016	0.015	0.022	0.021	0.021	0.017	0.026	0.043
1998	0.020	0.017	0.015	0.019	0.018	0.016	0.025	0.025	0.024	0.019	0.061	0.104
1999	0.020	0.019	0.016	0.017	0.018	0.017	0.026	0.025	0.026	0.031	0.090	0.019
2000	0.018	0.015	0.013	0.016	0.015	0.014	0.024	0.023	0.024	0.018	0.101	0.074
2001	0.013	0.011	0.010	0.012	0.011	0.010	0.015	0.015	0.016	0.012	0.155	0.189
2002	0.013	0.012	0.010	0.013	0.013	0.011	0.015	0.016	0.016	0.030	0.040	0.042
2003	0.013	0.011	0.010	0.013	0.012	0.011	0.015	0.016	0.016	0.010	0.129	0.077
2004	0.017	0.015	0.013	0.016	0.015	0.014	0.019	0.020	0.021	0.012	0.100	0.169
2005	0.017	0.016	0.013	0.016	0.016	0.015	0.022	0.021	0.022	0.015	0.038	0.091
2006	0.018	0.017	0.015	0.018	0.018	0.016	0.024	0.025	0.024	0.016	0.018	0.017
2007	0.025	0.025	0.020	0.023	0.024	0.021	0.029	0.031	0.031	0.022	0.036	0.097
2008	0.011	0.011	0.009	0.011	0.010	0.010	0.012	0.012	0.013	0.108	0.106	0.126
2009	0.010	0.009	0.008	0.009	0.010	0.009	0.014	0.014	0.014	0.009	0.010	0.024
2010	0.012	0.011	0.009	0.012	0.011	0.010	0.014	0.014	0.014	0.091	0.056	0.127
2011	0.011	0.011	0.010	0.011	0.011	0.010	0.014	0.014	0.014	0.089	0.138	0.117
2012	0.012	0.011	0.009	0.012	0.011	0.009	0.015	0.015	0.015	0.009	0.011	0.023
2013	0.012	0.010	0.009	0.012	0.010	0.010	0.014	0.015	0.015	0.081	0.146	0.084
2014	0.013	0.012	0.009	0.013	0.012	0.010	0.014	0.014	0.015	0.010	0.075	0.122
2015	0.012	0.010	0.008	0.011	0.010	0.009	0.014	0.014	0.014	0.010	0.011	0.010

Source: Own construction based on PALMS.

Table A9: Occupational segregation by gender, standard errors (Coloureds)

	Segregation						Concentration					
	Gini			Dissimilarity			Gini			Dissimilarity		
Digits	1	2	3	1	2	3	1	2	3	1	2	3
1994	0.016	0.013	0.009	0.012	0.013	0.011	0.016	0.016	0.015	0.062	0.012	0.013
1995	0.017	0.014	0.012	0.014	0.013	0.014	0.019	0.018	0.018	0.014	0.016	0.013
1996	0.028	0.023	0.017	0.023	0.022	0.021	0.033	0.032	0.031	0.045	0.090	0.048
1997	0.016	0.015	0.013	0.014	0.015	0.014	0.018	0.018	0.019	0.015	0.114	0.064
1998	0.022	0.019	0.014	0.019	0.019	0.017	0.028	0.028	0.028	0.093	0.102	0.034
1999	0.020	0.016	0.014	0.016	0.016	0.015	0.020	0.020	0.021	0.049	0.023	0.018
2000	0.019	0.016	0.013	0.016	0.015	0.015	0.021	0.021	0.023	0.058	0.101	0.033
2001	0.013	0.012	0.010	0.012	0.012	0.011	0.016	0.016	0.015	0.041	0.047	0.023
2002	0.014	0.012	0.009	0.011	0.012	0.010	0.017	0.017	0.017	0.033	0.103	0.050
2003	0.014	0.012	0.010	0.012	0.012	0.011	0.017	0.017	0.016	0.042	0.102	0.079
2004	0.016	0.014	0.012	0.014	0.014	0.013	0.019	0.019	0.019	0.059	0.077	0.028
2005	0.019	0.014	0.012	0.016	0.014	0.014	0.020	0.020	0.021	0.027	0.106	0.071
2006	0.021	0.016	0.012	0.015	0.015	0.014	0.023	0.023	0.023	0.107	0.038	0.030
2007	0.023	0.019	0.013	0.019	0.018	0.016	0.025	0.025	0.025	0.043	0.067	0.018
2008	0.010	0.008	0.007	0.009	0.009	0.008	0.012	0.011	0.011	0.010	0.074	0.008
2009	0.010	0.010	0.007	0.008	0.010	0.008	0.013	0.013	0.013	0.011	0.106	0.046
2010	0.010	0.009	0.008	0.008	0.010	0.009	0.012	0.012	0.012	0.010	0.033	0.009
2011	0.012	0.011	0.008	0.010	0.010	0.009	0.012	0.013	0.013	0.010	0.087	0.010
2012	0.011	0.009	0.008	0.009	0.009	0.009	0.012	0.012	0.012	0.010	0.079	0.009
2013	0.011	0.010	0.008	0.009	0.010	0.009	0.013	0.013	0.013	0.011	0.032	0.010
2014	0.012	0.010	0.008	0.008	0.009	0.009	0.012	0.012	0.012	0.010	0.098	0.010
2015	0.012	0.011	0.009	0.011	0.011	0.010	0.013	0.013	0.013	0.010	0.043	0.011

Source: Own construction based on PALMS.

Table A10: Occupational segregation by gender, standard errors (Indians/Asians)

	Segregation						Concentration					
	Gini			Dissimilarity			Gini			Dissimilarity		
Digits	1	2	3	1	2	3	1	2	3	1	2	3
1994	0.024	0.020	0.016	0.019	0.018	0.016	0.026	0.026	0.027	0.077	0.024	0.016
1995	0.033	0.026	0.022	0.030	0.025	0.024	0.039	0.036	0.038	0.033	0.121	0.078
1996	0.043	0.035	0.028	0.037	0.031	0.029	0.049	0.049	0.046	0.071	0.104	0.089
1997	0.039	0.034	0.026	0.035	0.033	0.030	0.037	0.038	0.038	0.138	0.071	0.094
1998	0.043	0.033	0.022	0.041	0.034	0.030	0.057	0.058	0.059	0.061	0.092	0.106
1999	0.043	0.040	0.025	0.035	0.037	0.029	0.052	0.052	0.053	0.092	0.101	0.114
2000	0.038	0.034	0.025	0.036	0.032	0.030	0.057	0.057	0.059	0.054	0.066	0.076
2001	0.032	0.028	0.023	0.027	0.024	0.022	0.031	0.033	0.033	0.094	0.042	0.057
2002	0.029	0.028	0.024	0.024	0.025	0.025	0.035	0.035	0.035	0.135	0.072	0.054
2003	0.028	0.027	0.022	0.026	0.025	0.023	0.034	0.034	0.033	0.113	0.124	0.122
2004	0.033	0.029	0.025	0.028	0.027	0.024	0.037	0.038	0.039	0.068	0.028	0.028
2005	0.034	0.029	0.025	0.030	0.028	0.026	0.045	0.045	0.045	0.093	0.123	0.137
2006	0.035	0.029	0.022	0.029	0.028	0.024	0.042	0.044	0.045	0.163	0.088	0.124
2007	0.041	0.033	0.024	0.036	0.031	0.027	0.046	0.046	0.047	0.125	0.129	0.096
2008	0.018	0.017	0.015	0.015	0.016	0.017	0.022	0.022	0.022	0.038	0.108	0.044
2009	0.023	0.023	0.018	0.021	0.021	0.019	0.025	0.025	0.026	0.018	0.027	0.020
2010	0.022	0.020	0.017	0.019	0.019	0.018	0.024	0.025	0.025	0.031	0.123	0.058
2011	0.024	0.022	0.019	0.022	0.022	0.020	0.027	0.026	0.026	0.041	0.122	0.059
2012	0.022	0.020	0.016	0.021	0.019	0.018	0.026	0.027	0.028	0.153	0.095	0.118
2013	0.025	0.022	0.018	0.021	0.021	0.019	0.027	0.028	0.028	0.119	0.111	0.088
2014	0.024	0.023	0.020	0.022	0.022	0.020	0.027	0.028	0.028	0.101	0.137	0.137
2015	0.021	0.020	0.015	0.022	0.020	0.019	0.027	0.026	0.027	0.018	0.020	0.020

Source: Own construction based on PALMS.

Table A11: Education by gender and population group (percentage of workers)

	Census								LFS							
	Men				Women				Men				Women			
	African	Coloured	Indian	White	African	Coloured	Indian	White	African	Coloured	Indian	White	African	Coloured	Indian	White
1994																
No schooling									14.2	5.9	0.3	0.5	11.1	5.1	0.7	0.4
Some primary									17.3	12.1	1.5	0.2	14.0	11.8	4.3	0.1
Primary									16.2	16.1	3.8	0.3	16.3	17.0	5.7	0.2
Lower secondary									33.8	45.6	45.4	27.0	36.1	43.9	36.7	22.6
Secondary									16.9	19.2	43.2	55.9	20.6	21.1	47.8	65.2
University									1.7	1.1	5.8	16.2	1.9	1.1	4.9	11.6
1996																
No schooling	17.0	7.9	1.4	0.6	15.3	5.8	2.3	0.7	13.3	6.0	1.4	2.1	11.5	5.4	2.7	1.4
Some primary	13.2	11.1	1.4	0.2	11.5	9.2	2.3	0.2	14.7	9.4	1.4	0.2	13.1	11.5	1.6	0.0
Primary	25.5	27.4	12.4	1.8	25.7	27.9	12.8	1.0	14.8	16.9	3.0	0.9	14.0	14.8	3.8	0.3
Lower secondary	21.0	27.6	27.1	15.1	21.0	28.4	22.1	16.1	33.3	40.3	38.5	21.8	33.2	38.3	34.1	16.7
Secondary	18.3	20.9	44.5	56.9	20.9	23.9	47.6	60.7	21.8	25.5	44.4	56.9	25.5	28.6	50.1	65.8
University	1.4	1.7	6.1	13.2	1.7	1.7	6.3	11.9	2.2	2.0	11.3	18.2	2.7	1.4	7.8	15.9
Other/unknown	3.6	3.5	7.1	12.2	3.9	3.3	6.7	9.5								
2001																
No schooling	14.3	6.1	1.5	0.7	13.6	4.8	1.7	0.6	17.3	13.1	3.2	0.7	18.1	9.7	3.2	0.7
Some primary	13.3	10.8	1.4	0.3	11.2	9.1	2.1	0.4	15.8	10.1	0.9	0.1	14.5	8.3	1.8	0.1
Primary	20.9	24.3	9.2	2.7	20.4	24.0	9.0	2.0	9.3	8.3	3.4	0.4	9.2	8.6	2.0	0.4
Lower secondary	21.5	28.3	23.9	16.0	20.6	27.8	19.5	13.6	33.2	38.1	32.4	20.4	32.5	40.6	29.8	17.6
Secondary	27.3	28.5	54.6	61.7	30.6	32.5	56.9	67.5	21.7	27.2	48.8	56.9	22.3	29.8	49.5	63.0
University	2.7	2.0	9.4	18.6	3.7	2.0	10.8	15.9	2.6	3.2	11.4	21.5	3.4	3.2	13.7	18.2
2007																
No schooling	7.0	3.3	1.1	0.2	7.3	2.6	0.6	0.2	12.3	7.7	1.8	1.6	12.3	6.8	0.9	0.2
Some primary	12.8	8.4	1.4	0.3	10.4	7.0	1.6	0.2	10.5	7.4	1.3	0.1	9.9	6.0	1.4	0.1
Primary	19.2	21.2	6.5	2.7	17.3	20.0	5.7	1.8	7.2	7.8	1.2	0.3	6.5	8.1	0.7	0.2
Lower secondary	23.7	28.6	17.9	12.0	22.3	26.4	12.5	9.8	36.2	38.5	27.8	18.1	34.5	36.6	23.1	15.7
Secondary	32.4	33.9	58.2	59.8	35.7	39.0	60.7	64.8	30.1	36.8	55.1	60.1	32.2	39.1	60.2	64.7
University	3.7	3.3	13.9	24.5	5.7	3.4	17.6	22.5	3.7	1.9	13.0	19.8	4.6	3.5	13.8	19.2
Other/unknown	1.1	1.5	1.0	0.6	1.3	1.6	1.3	0.7								
2015																
No schooling									4.4	3.2	0.9	0.9	4.7	2.6	0.2	0.8
Some primary									6.9	5.1	1.1	0.2	6.1	3.0	0.5	0.3
Primary									8.2	8.9	3.0	0.4	7.4	8.3	0.7	0.2
Lower secondary									39.3	39.3	16.3	11.3	35.2	36.8	11.3	7.4
Secondary									36.9	39.3	62.5	63.5	40.7	43.9	63.7	63.5
University									4.2	4.2	16.2	23.8	5.9	5.5	23.7	28.0

Source: Own construction based on IPUMS-I (Census) and PALMS (LFS).

Table A12: Logit regression coefficients (probability of being male)

	All			White			Black			Indian/Asian			Coloured		
	1996	2001	2007	1996	2001	2007	1996	2001	2007	1996	2001	2007	1996	2001	2007
Urban	0.16***	0.13***	-0.10***	0.39***	0.35***	0.17***	0.14***	0.12***	-0.12***	0.47***	0.62***	0.51*	0.16***	0.14***	0.08*
Eastern Cape	0.15***	0.17***	0.18***	-0.04	-0.01	-0.05	0.35***	0.31***	0.22***	0.2	0.12	0.18	-0.09***	-0.09***	-0.17***
Northern Cape	-0.09***	-0.13***	-0.17***	-0.07*	-0.17***	-0.17*	0.08**	-0.01	-0.19***	0.12	-0.06	-0.44	-0.15***	-0.17***	-0.16***
Free State	0.06***	0.01	-0.20***	-0.06*	-0.06*	-0.01	0.22***	0.10***	-0.24***	0.09	0.10	-0.80*	-0.04	-0.14**	-0.15
KwaZulu-Natal	0.11***	0.12***	0.06**	-0.01	-0.01	-0.02	0.26***	0.21***	0.07**	-0.06	-0.11	-0.09	0.10**	0.06	-0.06
North West	-0.05***	-0.21***	-0.36***	-0.15***	-0.19***	-0.18**	0.08***	-0.17***	-0.40***	-0.11	-0.41**	-0.38	-0.01	-0.16*	-0.38**
Gauteng	-0.02**	-0.05***	-0.11***	-0.01	0.00	-0.04	0.06***	-0.04**	-0.16***	-0.03	-0.04	0.03	0.07**	0.07**	0.01
Mpumalanga	-0.11***	-0.10***	-0.17***	-0.27***	-0.21***	-0.19***	0.05*	-0.02	-0.18***	-0.16	-0.31*	-0.50*	-0.10	-0.06	-0.16
Limpopo	0.16***	0.16***	0.09***	-0.05	-0.06	-0.17*	0.31***	0.24***	0.09**	-0.03	-0.56***	-0.62	0.14	0.16	-0.27
Some primary	-0.06***	-0.11***	-0.22***	-0.02	0.19	-0.53	-0.05***	-0.13***	-0.23***	0.11	0.31*	0.75*	0.05	0.01	-0.01
Primary (6 years)	0.06***	0.01	-0.09***	-0.75***	-0.26**	-0.67*	0.09***	0.04**	-0.08**	-0.40***	-0.08	0.41	0.18***	0.09**	0.06
Lower secondary	0.06***	-0.02	-0.03	-0.15*	-0.15*	-0.49	0.10***	0.05***	0.03	-0.87***	-0.45***	0.00	0.14***	0.04	0.02
Secondary	0.18***	0.19***	0.21***	-0.14*	0.11	-0.19	0.22***	0.23***	0.23***	-0.69***	-0.26**	0.39	0.23***	0.18***	0.25***
University	0.11***	0.15***	0.30***	-0.27***	-0.1.0	-0.32	0.28***	0.41***	0.55***	-0.62***	-0.05	0.63*	0.10	0.08	0.17
Unknown	0.04**		0.22***	-0.38***		-0.11	0.16***		0.27***	-0.70***		0.50	0.06		0.14
Other education	-0.07**			-0.53***			0.28***			-0.79***			-0.07		
Aged 25–34	0.09***	0.13***	0.12***	-0.27***	-0.20***	-0.08	0.20***	0.20***	0.17***	-0.18***	-0.15***	-0.30***	0.13***	0.13***	0.08*
Aged 35–44	0.16***	0.34***	0.32***	-0.44***	-0.31***	-0.27***	0.39***	0.55***	0.46***	-0.37***	-0.30***	-0.36***	0.12***	0.20***	0.26***
Aged 45–54	0.01	0.28***	0.29***	-0.61***	-0.45***	-0.34***	0.30***	0.57***	0.51***	-0.86***	-0.63***	-0.67***	-0.06*	0.08**	0.08
Aged 55–65	-0.26***	-0.07***	0.00	-0.87***	-0.73***	-0.57***	0.06***	0.26***	0.24***	-1.52***	-1.42***	-1.16***	-0.48***	-0.41***	-0.27***
Married/in union	-0.38***	-0.55***	-0.42***	0.20***	0.18***	0.19***	-0.54***	-0.75***	-0.54***	-0.09**	-0.07*	0.00	-0.35***	-0.45***	-0.38***
Separated/divorced/ spouse absent	0.86***	0.76***	0.84***	1.02***	1.08***	1.14***	1.02***	0.85***	0.86***	1.18***	1.20***	1.15***	0.76***	0.75***	0.89***
Widowed	1.71***	1.53***	1.44***	2.15***	2.12***	1.98***	1.70***	1.44***	1.34***	2.13***	2.27***	2.34***	1.19***	1.15***	1.27***
Disabled	-0.13***	0.00	0.14***	0.23***	0.22***	0.25*	-0.18***	-0.06***	0.11**	0.18*	0.15	0.31	0.07	0.24***	0.32**
Internal immigrant	-0.18***	-0.16***	-0.30***	-0.08***	-0.11***	-0.18***	-0.19***	-0.19***	-0.35***	0.02	-0.10	-0.03	0.02	-0.03	-0.16
Foreign immigrant	-0.62***	-0.66***	-0.70***	-0.12*	-0.23***	-0.37***	-0.74***	-0.80***	-0.77***	-0.49***	-1.16***	-0.85***	-0.38*	-0.43*	-0.43
Black	-0.05***	-0.08***	-0.06***												
Asian	-0.37***	-0.33***	-0.30***												
Coloured	0.06***	0.11***	0.07***												
Unknown race	0.06*														
Intercept	-0.30***	-0.33***	-0.27***	-0.50***	-0.69***	-0.23	-0.54***	-0.49***	-0.37***	-0.17	-0.64***	-1.23**	-0.48***	-0.46***	-0.54***
Number of obs.	772,590	722,281	233,110	166,560	139,085	33,268	463,790	451,142	160,967	34,025	32,374	7,778	101,029	99,680	31,097
Wald chi2(28)	30,959	33,052	8,924	5,744	4,280	807	24,343	28,037	8,060	1,657	1,567	339	3,002	3,296	822

Notes: Omitted categories: Rural, Western Cape, No schooling, Aged 16–24, Non-immigrant, (White), No disability. p-values: * <0.05; ** <0.01; *** <0.001. Regressions using LFS upon request.

Source: Own construction based on IPIMUS-International.

Table A13: Dissimilarity concentration (low-pay segregation) index for women (Census): decomposition

	1996					2001					2007				
	All	Black	White	Coloured	Indian/ Asian	All	Black	White	Coloured	Indian/ Asian	All	Black	White	Coloured	Indian/ Asian
Unconditional	0.229	0.347	-0.156	0.150	0.079	0.193	0.290	0.150	0.124	0.090	0.175	0.239	-0.124	-0.113	-0.129
	(0.001)	(0.001)	(0.002)	(0.003)	(0.016)	(0.001)	(0.001)	(0.003)	(0.003)	(0.005)	(0.002)	(0.002)	(0.096)	(0.103)	(0.011)
Ratio	44.3%	62.2%	-7.3%	30.1%	21.6%	40.8%	57.2%	6.6%	29.2%	24.2%	44.5%	56.4%	-4.35	-30.1%	-40.0%
Unexplained	0.242	0.365	-0.155	0.184	0.077	0.208	0.307	0.148	0.153	0.097	0.189	0.257	0.118	0.124	-0.109
	(0.001)	(0.001)	(0.002)	(0.003)	(0.024)	(0.001)	(0.001)	(0.002)	(0.003)	(0.005)	(0.002)	(0.003)	(0.120)	(0.004)	(0.018)
Explained	-0.013	-0.018	0.000	-0.033	0.001	-0.016	-0.017	0.002	-0.029	-0.007	-0.014	-0.018	-0.242	-0.237	-0.020
	(0.001)	(0.001)	(0.001)	(0.002)	(0.023)	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.001)	(0.001)	(0.117)	(0.102)	(0.013)
Area	-0.006	-0.002	-0.003	-0.012	-0.003	-0.006	-0.002	-0.001	-0.010	-0.001	0.003	0.001	-0.048	-0.064	-0.002
	(0.000)	(0.000)	(0.000)	(0.001)	(0.006)	(0.000)	(0.000)	(0.002)	(0.001)	(0.002)	(0.000)	(0.000)	(0.020)	(0.021)	(0.002)
Province	-0.001	-0.003	-0.002	-0.004	-0.004	-0.001	-0.002	-0.002	-0.004	-0.001	-0.002	-0.003	-0.048	-0.014	-0.001
	(0.000)	(0.000)	(0.000)	(0.001)	(0.007)	(0.000)	(0.000)	(0.002)	(0.001)	(0.003)	(0.000)	(0.000)	(0.025)	(0.020)	(0.004)
Education	-0.016	-0.021	0.001	-0.012	0.010	-0.024	-0.028	0.004	-0.011	-0.010	-0.031	-0.033	-0.090	-0.196	-0.019
	(0.001)	(0.001)	(0.001)	(0.002)	(0.025)	(0.001)	(0.001)	(0.002)	(0.002)	(0.007)	(0.001)	(0.001)	(0.059)	(0.077)	(0.013)
Age	-0.002	0.001	0.005	-0.005	-0.012	0.002	0.009	-0.001	-0.003	-0.005	0.004	0.010	0.033	-0.014	-0.007
	(0.000)	(0.000)	(0.001)	(0.001)	(0.031)	(0.000)	(0.000)	(0.002)	(0.001)	(0.006)	(0.000)	(0.001)	(0.029)	(0.017)	(0.006)
Race	0.000					-0.002					-0.002				
	(0.001)					(0.001)					(0.001)				
Marital	0.012	0.010	-0.001	0.000	0.007	0.014	0.008	0.001	-0.001	0.007	0.013	0.008	-0.089	0.048	0.008
	(0.000)	(0.001)	(0.000)	(0.001)	(0.021)	(0.000)	(0.000)	(0.001)	(0.001)	(0.014)	(0.001)	(0.001)	(0.046)	(0.035)	(0.011)
Disability	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-0.002	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.006)	(0.006)	(0.001)
Immigration	0.000	-0.002	0.000	0.000	0.003	0.000	-0.001	0.001	0.000	0.002	0.001	0.000	0.000	0.006	0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)	(0.010)	(0.005)	(0.003)

Note: Bootstrap standard errors (200 replications) showed below in parentheses.

Source: Own construction based on IPUMS-International.

Table A14: Explained segregation and concentration indices (LFS)

	Segregation								Concentration							
	Gini				Dissimilarity				Gini				Dissimilarity			
	Explained (total)	%Gini	Explained (education)	%Gini	Explained (total)	%D	Explained (education)	%D	Explained (total)	%Gini	Explained (education)	%Gini	Explained (total)	%D	Explained (education)	%D
1994	0.003	0.4	0.001	0.1	0.012	2.0	0.006	1.0	0.003	0.4	0.001	0.1	0.012	2.0	0.006	1.0
1995	0.034	4.9	0.025	3.7	0.051	9.4	0.037	6.8	0.034	4.9	0.025	3.7	0.051	9.4	0.037	6.8
1996	-0.003	-0.4	-0.002	-0.2	0.001	0.2	0.002	0.3	-0.003	-0.4	-0.002	-0.2	0.001	0.2	0.002	0.3
1997	0.000	0.0	-0.001	-0.2	0.002	0.3	0.001	0.3	0.000	0.0	-0.001	-0.2	0.002	0.3	0.001	0.3
1998	-0.002	-0.3	-0.002	-0.2	0.000	0.1	0.001	0.2	-0.002	-0.3	-0.002	-0.2	0.000	0.1	0.001	0.2
1999	-0.006	-0.9	-0.003	-0.4	0.002	0.3	0.004	0.7	-0.006	-0.9	-0.003	-0.4	0.002	0.3	0.004	0.7
2000	0.000	0.0	-0.001	-0.2	0.003	0.6	-0.002	-0.3	0.000	0.0	-0.001	-0.2	0.003	0.6	-0.002	-0.3
2001	0.001	0.1	-0.002	-0.3	0.002	0.3	-0.001	-0.3	0.001	0.1	-0.002	-0.3	0.002	0.3	-0.001	-0.3
2002	0.001	0.2	-0.001	-0.1	0.005	0.9	0.000	0.0	0.001	0.2	-0.001	-0.1	0.005	0.9	0.000	0.0
2003	0.003	0.5	-0.002	-0.3	0.004	0.7	-0.001	-0.1	0.003	0.5	-0.002	-0.3	0.004	0.7	-0.001	-0.1
2004	-0.001	-0.1	-0.003	-0.4	0.000	-0.1	-0.003	-0.5	-0.001	-0.1	-0.003	-0.4	0.000	-0.1	-0.003	-0.5
2005	0.002	0.3	-0.003	-0.4	0.003	0.5	-0.002	-0.4	0.002	0.3	-0.003	-0.4	0.003	0.5	-0.002	-0.4
2006	0.001	0.2	-0.002	-0.3	0.003	0.6	-0.003	-0.5	0.001	0.2	-0.002	-0.3	0.003	0.6	-0.003	-0.5
2007	0.001	0.1	-0.004	-0.6	0.000	0.0	-0.004	-0.9	0.001	0.1	-0.004	-0.6	0.000	0.0	-0.004	-0.9
2008	0.000	0.1	-0.004	-0.6	0.001	0.2	-0.002	-0.4	0.000	0.1	-0.004	-0.6	0.001	0.2	-0.002	-0.4
2009	0.000	0.0	-0.004	-0.6	-0.001	-0.2	-0.006	-1.1	0.000	0.0	-0.004	-0.6	-0.001	-0.2	-0.006	-1.1
2010	0.002	0.2	-0.002	-0.4	0.001	0.1	-0.004	-0.7	0.002	0.2	-0.002	-0.4	0.001	0.1	-0.004	-0.7
2011	0.001	0.1	-0.003	-0.5	0.001	0.2	-0.004	-0.8	0.001	0.1	-0.003	-0.5	0.001	0.2	-0.004	-0.8
2012	0.000	0.0	-0.004	-0.5	0.001	0.2	-0.003	-0.6	0.000	0.0	-0.004	-0.5	0.001	0.2	-0.003	-0.6
2013	0.002	0.3	-0.003	-0.5	0.002	0.3	-0.002	-0.4	0.002	0.3	-0.003	-0.5	0.002	0.3	-0.002	-0.4
2014	-0.001	-0.1	-0.004	-0.6	0.000	0.0	-0.003	-0.6	-0.001	-0.1	-0.004	-0.6	0.000	0.0	-0.003	-0.6
2015	0.003	0.4	-0.003	-0.5	0.005	0.9	-0.002	-0.4	0.003	0.4	-0.003	-0.5	0.005	0.9	-0.002	-0.4

Source: Own construction based on PALMS.