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PAULA ARMSTRONG

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PAULA ARMSTRONG
DEPARTMENT OF ECONOMICS
UNIVERSITY OF STELLENBOSCH
PRIVATE BAG X1, 7602
MATIELAND, SOUTH AFRICA
E-MAIL: PAULA@SUN.AC.ZA



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ABSTRACT

Educational quality is a challenge facing the South African schooling system. It is widely acknowledged that teachers play a central role in the quality of education received by students, and that the quality of teachers is largely dependent on the wage they are offered in the teaching profession. This paper investigates the state of teacher pay in the South African labour market by comparing the remuneration received by teachers with that received by their non-teaching counterparts. Remuneration is compared across educational attainment levels, years of experience and across age groups. A Lemieux Decomposition is used to determine what the distribution of teacher wages would look like if teachers were remunerated according to the same structure as non-teachers. It is found that the teaching profession is relatively unattractive to individuals at the top end of the skills distribution in the South African labour market.

Keywords: Education; Wage differentials by occupations, Wage level and structure
JEL codes: I2; J31

¹ Department of Economics, University of Stellenbosch. The author would like to thank Professor Servaas van der Berg for helpful comments on an earlier draft.

1.INTRODUCTION: TEACHER PAY AND EDUCATIONAL QUALITY

The central role played by teachers in determining the quality of education received by students is widely recognized internationally (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2006). Teachers are seen as the “central actors in education, facilitators of learning, bringers of knowledge, brokers of relationships between pupils and the societies in which they live” (Voluntary Services Overseas [VSO], 2002). Within developing societies specifically, teachers are often perceived to be the central learning resource given the difficult working and living conditions prevalent in these societies. The scarcity of teaching resources often renders teachers the only channel through which society is able to achieve its educational aspirations. “Teachers interaction with learners is the axis on which educational quality turns” (VSO, 2002).

However, the rapid expansion of access to education (particularly in developing countries) has resulted in the creation of incentives to lower the minimum requirements for entry in the teaching profession in order to meet the greater need for teachers. By lowering the minimum requirements to enter the teaching force, there is a danger that the overall quality of teachers (and therefore education) will decline (UNESCO, 2005). Teacher quality is understood to depend on numerous factors, which include who is attracted to the teaching force, the incentives put in place for these individuals to perform well, and whether the best-performing teachers remain in the teaching force (Hernani-Limarino, 2005).

The recruitment, performance and retention of teachers is dependent on the “opportunity cost” of being a teacher, and the most important aspect of this opportunity cost is the wage received by individuals in the teaching force versus that received by individuals employed in the non-teaching professions (Hernani-Limarino, 2005). A pressing question in economics of education literature is whether the remuneration offered to teachers is sufficient to guarantee acceptable teacher quality by attracting, recruiting and retaining the most “attractive” individuals, in terms of productive characteristics.

It is therefore evident first of all, that the role played by teachers in the quality of education received by students is pivotal, and secondly, that the quality of teachers entering the teaching force is largely dependent on the wage received by teachers.

The paper investigates the wage structure of teachers in the South African labour market. Specifically, it investigates how productive characteristics of teachers are remunerated in comparison with how the productive characteristics of non-teachers are remunerated.

Section 2 provides an overview of teacher salaries and the teaching force in South Africa. It includes a brief history of teacher salaries in South Africa, an overview of employment trends amongst teachers and a profile of the South African teaching force. In addition, the 2008 teacher salary agreement is explained and a brief discussion of financial incentives for teachers in the South African labour market.

Section 3 is a wage analysis of South African teachers. The section is comprised of a wage analysis conducted using an augmented Mincerian wage function and a comparison between the wage distribution of teachers and that of non-teachers, presenting finally the wage distribution that would prevail amongst teachers if they were remunerated according to the wage structure of non-teachers in the South African labour market. Section 4 concludes.

2.TEACHERS AND TEACHER SALARIES IN SOUTH AFRICA

2.1 TEACHER SALARIES IN SOUTH AFRICA: HISTORICAL OVERVIEW

Edupol (1993) reports that between 1988 and 1992, average basic teacher salaries increased by 124% in nominal terms or 30.3% in real terms. However, this increase was not uniform, with certain categories of teachers receiving substantially higher increases than others. For example, white females entering the teaching force with no official qualifications experienced salary increases of 49.5% in comparison with the average real increase of 10.5% for other civil servants over the same period (Edupol, 1993). However, evidence exists that white teacher salaries on average decreased by between 12% and 20% in real terms between 1983 and 1996 while real GNP decreased by just 6% over the same period (South African Teachers Association (SATA), 2000; South African Reserve Bank (SARB) Quarterly Bulletins, 1990-1997). Government policy regarding teacher pay² resulted in different demographic groups experiencing differences

² Government policy regarding teacher pay was to bring the salary scales of female and non-white teachers in line with those of white male teachers (Hosking, 2000).

regarding salaries, with white male teachers faring worst and black female teachers experiencing the biggest increases (Hosking, 2000).

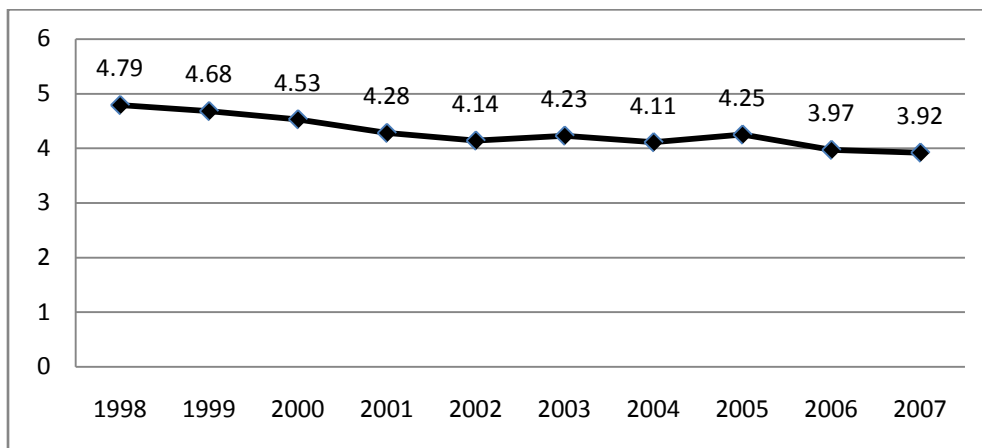
Disparities along the lines of race and gender were also eliminated by government policy between 1983 and 1997. 1986 saw the equalization of salary scales between black and white teachers, with gender differences being eliminated in 1992 (Edupol, 1993). The overall objective of government policy was to bring salary *scales* for the entire teaching force in line with those of white male teachers. Average salaries were therefore not equal across race and gender groups (although they were still closer together) and in 1992, the mean salary for black female teachers was approximately half of what it was for white male teachers (who constituted 7.3% of all teachers in 1992); (Edupol, 1993). Given the equalization of salary scales therefore, the higher average salary for the latter group suggests that this group contained a greater proportion of teachers with more years of teaching experience and with more qualifications (Hosking, 2000).

A further characteristic of teacher salaries in the 1990s was trade union pressure for the compression of teacher salaries (i.e. the curtailment of salary increases at the upper end of the scale and higher increases in the salaries at the lower end of the salary scale). Indeed, the Education Labour Relations Council called for salary increases of 5% for teachers in the highest posts, while for teachers at the lowest level of the education system were to receive increases of close to 29% (Bot, 1996). Similarly, SADTU proposed salary increases of around 11% or 12% for teachers at the lowest levels of the scale, and no increase at all for teachers at the top of the salary scale (Hosking, 2000). The intention of such adjustments was to discourage the acquisition of additional qualifications and promotions in order to increase remuneration. It is argued that this type of remuneration results in a “paper chase” with teachers acquiring often irrelevant qualifications (in terms of the education system and the school environment) in order to receive higher pay (Edupol, 1993).

The post-apartheid equalization of teacher pay therefore resulted in a substantial increase in teacher salaries. In fact, black teachers who had attained four years of post-secondary education experienced real pay increases in the region of 25% in the mid-1990s (Gustafsson and Patel, 2008). South Africa therefore experienced an abrupt increase in the unit cost of teachers post-1994, creating considerable constraints for the public education system. In particular, it became considerably more challenging to maintain pupil-teacher ratios (Gustafsson and Patel, 2008).

Salary spending per educator increased by a little more than the minimum pay notch between 1998 and 2006, indicating first of all that the public teacher workforce is becoming older, and secondly that a higher proportion of educators are moving into management positions – “management drift” – such as Head of Department (Gustafsson and Patel, 2008). Importantly, the ratio of mean teacher pay to GDP has been declining since 1997 (see figure 1 below) – a predictable trend in a country’s development trajectory and one that will render improvements like a lowering of the pupil teacher ratio a possibility in the long term (Gustafsson and Patel, 2008).

Figure 1: Ratio of Teacher Pay to GDP per capita



Source: Gustafsson and Patel, 2008

2.2 TEACHER EMPLOYMENT TRENDS IN SOUTH AFRICA

The number of teachers employed in schools and paid from public funds increased by 100 000 between 1987 and 1997 – largely a response to increased enrolment in schools over this period. With the implementation of a rationalisation process in the 1990’s (which permitted some teachers employed in public schools to become privately employed by the same public schools in which they had been teaching – almost exclusively in schools that enjoyed a favourable staffing situation), some 25 000 teachers were privately employed in public schools (Gustafsson and Patel, 2008). Furthermore, a substantial redistribution of teachers occurred after 1994. The overall result was a decrease in the pupil-teacher ratio amongst previously disadvantaged schools and that historically advantaged schools experienced higher pupil teacher ratios, despite the fact

that a large number of teachers were privately employed in historically advantaged public schools.

Important to note is that the average annual growth rate in the number of publicly employed educators and in workers considering themselves educators of some kind in the 7 year period following 1999 was approximately 0.9% per year, while the annual population growth rate over the same period was approximately 1.3% per year. It is therefore clear that problems exist in attracting sufficient numbers of young people to the teaching profession. Furthermore, an ageing workforce of educators coupled with the effects of HIV/AIDS has a substantial impact on the teaching force and the availability of suitable teachers (Gustafsson and Patel, 2008).

2.3 A PROFILE OF THE SOUTH AFRICAN TEACHING FORCE

In 1999, the South African teaching force was approximately 25% more feminine than the rest of the South African labour force (Crouch, 2001). Indeed, the September round of the 2006 Labour Force Survey (LFS) indicated that this gap had grown to almost 30%. In terms of educational attainment, South African teachers are considerably more educated than the remainder of the labour force, as teachers had roughly 56% more education than other employed workers in 1999 (Crouch, 2001). By 2006 this gap had narrowed to approximately 44% - primarily as the result of improvements in the educational attainment of the rest of the labour force and not as a result of deterioration in the attainment of teachers. Unionization amongst teachers is also considerably higher than it is amongst other professions. Indeed, the South African Democratic Teachers Union (SADTU) is one of the biggest unions within the Congress of South African Trade Unions (COSATU) (Seekings, 2004). Unionization rates amongst teachers increased until 1999, after which they stabilized.

Age is a further characteristic according to which South African teachers differ from the rest of the labour force. The South African non-teaching labour force is decreasing in age (on average), while the average age of South African teachers is increasing. In terms of participation of the population in the teaching force, white participation in the teaching profession has increased substantially since the country's transition from apartheid in 1994, while that of black workers has declined. Black participation in the rest of the labour force has increased, however (Crouch, 2001).

2.4 2008 SALARY AGREEMENT FOR SOUTH AFRICAN TEACHERS

The 2008 salary agreement for teachers in South Africa was introduced in order to create a stronger link between teacher performance and remuneration. The agreement was put in place with the intention of retaining high performing teachers in the teaching force, and creating incentives for improved performance in the teaching profession.

The 2008 salary agreement stipulates an immediate 5% increase in real terms and ensures significant future increases, particularly for teachers who are judged to perform well. While the previous assessment focused on the teacher's ability to prepare for class and to conduct pupil assessments as behavioral input factors, the 2008 agreement incorporates an in principle acceptance by both unions and employers to include pupil performance in the assessment of teachers (Gustafsson and Patel, 2008). A within-school assessment panel will judge teacher performance, and teachers judged by the aforementioned panel to perform at a "satisfactory" level will receive a biannual pay increase of 3%, over and above regular increases built in for inflation. Teachers who are judged by the district office to display a "good" or "outstanding" performance will respectively receive pay increases of 3% and 6% over and above the initial 3% gained for "satisfactory" performance, also every second year (Gustafsson and Patel, 2008).

The post 2008 remuneration system therefore offers significant future benefits to individuals entering the teaching force since it creates opportunities to achieve salary increases for improved performance over the span of one's teaching career. Indeed, the 2008 system results in South Africa having one of the steepest age-pay curves internationally. It may be useful to communicate this aspect of the teaching profession to the youth in order to attract the best candidates (Gustafsson and Patel, 2008).

2.5 FINANCIAL PERFORMANCE INCENTIVES FOR TEACHERS: SOUTH AFRICA IN AN INTERNATIONAL CONTEXT

Rewarding good performance amongst teachers either through increases in pay scales or through cash bonuses is not very widely used in either developed or developing countries, although promotion of teachers to senior teaching positions is widespread (Gustafsson and Patel, 2008). The 2008 system introduced in South Africa however implies limitation in the definition of "good" and "outstanding" performances, for example. Indeed, the budgeting and planning

process will require some kind of rationing to take place and this is likely to take place in the definitions of the various performance levels.

An important aspect of this new system of financial incentives for teachers is exactly how pupil performance is to be included in the evaluation criteria according to which teachers are classified as either “satisfactory”, “good” or “outstanding”. As mentioned earlier, the 2008 system includes an agreement that pupil performance should play some role in determining teacher pay in the future. However, the fact that students from wealthier household perform better than children from less wealthy household (Taylor, 2008) means that the influence of socioeconomic status on school performance should be controlled for when linking teacher incentives to student performance. Indeed, even focusing on improvements in student performance may result in teachers effectively being rewarded for the fact that the students they teach are of a higher socioeconomic status since improvements in performance have been shown to be positively linked with socioeconomic status. An interesting example of how this is dealt with is that of the SNED programme in Chile, in which schools are divided into groups according to the mean socioeconomic status of their students and schools compete within similar groups (Vegas, 2005).

2.6 CONCLUSION

The structure of teacher remuneration in South Africa has so far resulted in teacher at the top end of the salary scale experiencing the most unattractive financial prospects, relative to teachers at the lower end of the salary scale. It is shown later in the paper that the salary structure of teachers appears to provide little incentive for teachers at the top end of the scale to remain in the teaching profession while providing relatively attractive financial incentives for those at the lower end of the salary structure. The 2008 amendments to the salary structure may well prove useful in remedying some of this distortion and therefore providing attractive prospects for labour market entrants, as it includes incentive based on student performance. The fact that the South African teaching force is relatively well-educated compared to non-teachers indicates that more focus needs to be given to teacher performance in the classroom and not merely to the level of education of persons entering the teaching profession.

3. WAGE ANALYSIS

The objective of this paper is to investigate how attractive (financially) the teaching profession is to labour market participants. This section performs an analysis on the wages of teachers and of non-teachers in order to investigate how individuals with equal levels of educational attainment and experience are remunerated in the teaching profession and in other professions. It then becomes possible to compare the reward (in terms of remuneration) to higher levels of human capital amongst teachers and non-teachers.

This section therefore examines the earnings of teachers in the South African labour market, using October Household Survey from 1995 to 1999, and Labour Force Survey data from 2000 to 2007 (explained in section 5.2). The returns to education and experience are compared between teachers and non-teachers, and a Lemieux decomposition is used to investigate what the distribution of teacher wages would look like if teachers were remunerated in the labour market in the same way as non-teachers. The overall objective of this section is to investigate whether or not the wage structure of teachers versus that of non-teachers is conducive to convincing labour market participants to join the teaching force.

3.1 METHODOLOGY

3.1.1 Augmented Mincerian Wage Function

This first part of this section makes use of the widely used augmented Mincerian wage function, introduced by Jacob Mincer in 1974. The classic Mincerian wage function takes the form

$$\ln w = c + \beta_1 S + \beta_2 E + \beta_3 E^2 + e,$$

where w is the wage (or hourly wage, depending on data availability), c is a constant, S is the years of schooling, E is the years of labour market experience and e is an error term. In this wage function, S and E can be thought of as the “quantity” of human capital of each individual, and the coefficients on this human capital variables, β_1 and β_2 for years of schooling and years of labour market experience respectively, indicate the impact of an increase in each of these variables by one year on (the log of) hourly wages.

In this analysis, an augmented form of the Mincerian wage function is used in which in addition to the years of education and years of labour market experience, the individual's race, province of residence, industry of employment, gender, union membership, status as a teacher or non-teacher and the number of years they have worked for their current employer are controlled for. The augmented Mincerian wage function will therefore take the form

$$\ln wage = c + \beta_1(PRIMARY) + \beta_2(SECONDARY) + \beta_3(TERTIARY) + \beta_4(TEACHER X PRIMARY) + \beta_5(TEACHER X SECONDARY) + \beta_6(EXP) + \beta_7(EXP^2) + \beta_8(TEACHER X EXP) + \beta_9(TEACHER X EXP^2) + \beta_{10}(UNION) + \beta_{11}(FEMALE) + \beta_{12}(TENURE) + \beta_{13}(TEACHER) + u \quad (1)$$

The province in which an individual lives, the industry in which they are employed and the race of the individual are controlled for in equation 1. The variables included in the model are explained in section 3.3 below.

3.1.2 Lemieux Decomposition of Earnings Distributions

The Lemieux decomposition is used to observe what the monthly earnings structure of teachers would be if they were remunerated in the same way as non-teachers in the South African labour market, or what a monthly earnings distribution for non-teachers would look like if they had the same productive endowments as teachers.

The Lemieux decomposition used in this paper may be understood to be a generalization of the decomposition technique first introduced by Oaxaca and Blinder in 1973 (Lemieux, 2002). The Oaxaca-Blinder decomposition decomposes the difference in the mean wage between two groups into the component “explained” by differences in productive characteristics and an “unexplained” component (i.e. a component resulting from differences in how productive characteristics are remunerated between the two groups in question, or “discrimination”).

Decomposing the wage gap at the mean involves estimating the Ordinary Least Squares (OLS) wage regression

$$y_{it} = \beta_i x_{it} + u_{it} \quad (2)$$

where y_{it} is the log hourly wage of individual i belonging to group t (in this case to the group *teachers*), x_{it} is a vector of covariates, β_t is vector of parameters and u_{it} is an error term constructed to have a mean of 0 and to be uncorrelated with the covariates in the vector x_{it} (Lemieux, 2002). The sample average outcome y for teachers is therefore

$$\bar{y}_t = \bar{x}_t \beta_t \quad (3)$$

where $\bar{y}_t = \sum_1 \omega_{it}^3 y_{it}$

and $\bar{x}_t = \sum_1 \omega_{it} x_{it}$.

The outcome for individuals belonging to the second ground in the sample (in this case *non-teachers*) is estimated by

$$y_{in} = \beta_n x_{in} + u_{in} \quad (4)$$

where y_{in} is the log hourly wage of individual i belonging to group n (i.e. non-teachers), x_{in} is a vector of covariates, β_n is vector of parameters and u_{in} is an error term constructed to have a mean of 0 and to be uncorrelated with the covariates in the vector x_{in} . The sample average outcome y for teachers is therefore

$$\bar{y}_n = \bar{x}_n \beta_n \quad (5)$$

where $\bar{y}_n = \sum_1 \omega_{in}^4 y_{in}$

and $\bar{x}_n = \sum_1 \omega_{in} x_{in}$.

Calculating the difference between the mean outcomes of teachers and non-teachers therefore yields

$$\bar{y}_t - \bar{y}_n = \bar{x}_t (\beta_t - \beta_n) + \beta_n (\bar{x}_t - \bar{x}_n) \quad (6)$$

³ ω_{it} = sample weight of individual i in group t

⁴ ω_{in} = sample weight of individual i in group n

where $\bar{x}_t(\beta_t - \beta_n)$ is the difference in wages arising from differences in the remuneration structures faced by teachers and non-teachers (i.e. the “unexplained” component) and $\beta_n(\bar{x}_t - \bar{x}_n)$ is the difference in wages arising from differences in productive characteristics between teachers and non-teachers (Lemieux, 2002). $\beta_n\bar{x}_t$ may therefore be seen as the counterfactual mean value of y that would result if the remuneration structure of teachers was replaced with that of non-teachers. In other words, $\beta_n\bar{x}_t$ would be the wage prevalent for teachers if the “price” of human capital amongst teachers was equal to that experienced by non-teachers in the labour market.

The counterfactual wage for teachers is therefore

$$\bar{y}_t^a = \bar{x}_t\beta_n \quad (7)$$

which may be used to rewrite equation 6 as

$$\bar{y}_t - \bar{y}_n = (\bar{x}_t\beta_t - \bar{y}_t^a) + (\bar{y}_t^a - \bar{x}_n\beta_n) = (\bar{y}_t - \bar{y}_t^a) + (\bar{y}_t^a - \bar{y}_n).$$

Individual counterfactual wages are denoted y_{it}^a and calculated as

$$y_{it}^a = x_{it}\beta_n + u_{it} = y_{it} + x_{it}(\beta_n - \beta_t).$$

\bar{y}_t^a may also be calculated by computing a sample mean of y_{it}^a :

$$\bar{y}_t^a = \sum_1 \omega_{it} y_{it}^a. \quad (8)$$

In order to estimate what the *entire* distribution of teacher wages would look like (as opposed to just the *mean* wage), the probit for the probability of being a teacher is estimated on the pooled sample of teachers and non-teachers. The probit model produces the probability of being a member of the teaching force conditional on individual worker characteristics, or individual x 's:

$$P_{it} = \text{Prob}(\text{teacher} = 1 | x_{it}).$$

The reweighting function is then calculated using the estimated probability of being a teacher as

$$\Psi_i = \frac{\left[\frac{1-P_{it}}{P_{it}}\right]}{\left[\frac{P_t}{(1-P_t)}\right]}$$

where P_t is the unconditional probability of an observation being a member of the teaching force, or the weighted share of the pooled sample who are teachers (Lemieux, 2002). The reweighted distribution or the counterfactual distribution is therefore

$$y_t^a = \Psi(x_t\beta_n) = \Psi'y_n \quad (9)$$

where $\Psi' = \frac{1}{\psi}$ (Lemieux, 2002).

3.2 DATA

This section makes use of data from the October Household Surveys (OHS) from 1995 to 1999 and the March and September rounds of the Labour Force Surveys (LFS) from 2000 to 2007. After exclusions to be discussed shortly, the dataset consists of 445 825 individuals of which 6 274 are teachers. The analysis is conducted only for employed workers in the South African labour market. Workers reporting real monthly earnings in excess of R200 000, workers employed in the informal sector agricultural sector, domestic workers and the self-employed are excluded from the analysis.

Table 1 below presents the number of teachers and non-teachers in each year for which data is available.

Table 1: Number of Teachers and Non-Teachers by Year

Year	Teachers	Non-Teachers	Percentage of Sample that are Teachers	Total
1995	119 335	9 379 812	1.26	
1996	178 920	8 887 387	0.88	
1997	176 228	8 917 419	1.94	
1998	143 121	9 316 540	0.46	
1999	126 319	10 213 316	1.22	
2000	263 880	23 803 968	1.10	
2001	267 568	23 123 907	1.14	
2002	264 178	22 594 335	1.16	
2003	252 052	22 439 412	1.11	
2004	271 065	22 696 340	1.18	
2005	300 334	19 294 261	1.53	
2006	320 264	20 107 937	1.57	
2007	375 673	16 430 274	2.24	

Source: OHS 1995 – 1999 and LFS 2000 - 2007

Tables 2 and 3 present the eight race and gender subpopulations for teachers and non-teachers respectively.

Table 2: Gender and Race Subpopulations: Teachers

Year	Black		Coloured		Indian		White	
	Male	Female	Male	Female	Male	Female	Male	Female
1995	37 429	36 361	4 825	5 417	3 534	4 041	9 236	18 692
1996	21 975	29 407	1 578	1 361	5 448	1 638	5 032	12 481
1997	52 566	69 407	5 384	11 769	1 331	5 044	8 800	21 927
1998	8 763	12 079	2 725	5 489	*	1 190	3 090	9 875
1999	35 272	45 948	4 912	3 930	1 347	5 498	5 376	24 036
2000	51 312	81 277	8 147	7 282	4 322	12 512	28 062	70 966
2001	59 681	103 116	8 067	5 645	9 252	10 390	19 220	52 197
2002	58 994	108 430	7 588	7 951	6 132	8 098	18 472	48 513
2003	63 218	91 373	8 550	6 566	9 783	6 161	23 405	42 996
2004	63001	115 965	9 288	6 020	3 950	8 355	14 244	50 242
2005	72 566	135 861	7 121	4 424	817	3 853	9 995	65 428
2006	80 186	136 588	11 923	11 153	884	5 264	24 011	50 255
2007	77 923	162 594	9 060	21 765	2 716	3 663	10 848	85 647

Source: OHS 1995 – 1999 and LFS 2000 – 2007

Table 2 indicates that for the black, Indian and white populations in almost all the years for which data is presented, the teaching force is predominantly female. Interestingly, for the coloured populations (again with a few exceptions of a few years (1997, 2002 and 2007)) the teaching profession is predominantly male.

Table 3: Gender and Race Subpopulations: Non-Teachers

Year	Black		Coloured		Indian		White	
	Male	Female	Male	Female	Male	Female	Male	Female
1995	3 744 619	2 317 728	653 396	481 198	237 806	113 208	1 098 466	733 391
1996	3 277 458	2 160 506	692 276	526 816	211 983	118 049	1 111 256	789 043
1997	3 473 013	2 118 792	668 739	475 127	232 757	122 705	1 096 375	729 911
1998	3 608 884	2 285 551	666 677	493 411	225 472	115 479	1 109 020	812 046
1999	3 882 075	2 696 221	712 148	563 361	237 791	147 008	1 111 618	856 122
2000	8 860 954	7 489 342	1 415 470	1 219 163	508 144	277 481	2 333 885	1 693 995
2001	8 785 386	6 851 557	1 405 375	1 179 048	518 074	300 259	2 386 051	1 696 169
2002	8 725 865	6 387 713	1 443 474	1 144 824	513 756	306 468	2 411 994	1 656 024
2003	8 707 858	6 205 689	1 419 159	1 212 776	523 799	303 889	2 357 477	1 706 964
2004	8 963 468	6 260 370	1 442 778	1 226 383	550 284	276 232	2 318 257	1 653 396
2005	7 896 627	4 780 195	1 314 133	1 060 573	477 910	281 687	1 967 549	1 507 985
2006	8 201 773	5 246 369	1 302 393	1 095 804	482 347	308 021	1 960 123	1 510 114
2007	7 021 599	3 596 267	1 081 366	948 369	454 056	242 035	1 654 623	1 394 714

Source: OHS 1995 – 1999 and LFS 2000 – 2007

Table 3 indicates that in contrast to the teaching profession, non-teaching professions are predominantly male with a higher number of men being employed in these professions across all race groups and in all years for which data is presented.

3.3 VARIABLES INCLUDED IN THE MODEL

The variables included in equation 4 are presented in table 4 below.

Table 4: Variables Included in Augmented Mincerian wage Function⁵

VARIABLE	DESCRIPTION
Primary	A variable coded as a spline reflecting the number of years of primary education completed.
Secondary	A variable coded as a spline reflecting the number of years of secondary education completed.
Tertiary	A variable coded as a spline reflecting the number of years of tertiary education completed.
Teacher x Primary	An interaction term between the dummy variable taking a value of 1 if the worker is a teacher and the variable coded as a spline to reflect the number of years of primary education completed.
Teacher x Secondary	An interaction term between the dummy variable taking a value of 1 if the worker is a teacher and the variable coded as a spline to reflect the number of years of secondary education completed.
Teacher x Tertiary	An interaction term between the dummy variable taking a value of 1 if the worker is a teacher and the variable coded as a spline to reflect the number of years of tertiary education completed.

⁵ Dummy variables controlling for the industry in which a worker is employed and the province in which they are employed are included.

Exp	A continuous variable reflecting the number of years the worker has been employed in the labour market (calculated as [age – 6 – years of educational attainment])
Exp ²	A quadratic term (number of years of experience squared) included to control for the possibility of non-linearities in the returns to experience.
Teacher x Exp	An interaction term between the dummy variable taking a value of 1 if the worker is a teacher and the continuous variable controlling for the number of years a worker has been in the labour market.
Teacher x Exp ²	An interaction term between the dummy variable taking a value of 1 if the worker is a teacher and the quadratic term (experience) ² .
Union	Dummy variable: 1 = union member, 0 = non-union member
Female	Dummy variable: 1 = female, 0 = male
Tenure	A continuous variable reflecting the number of years that a worker has worked for their current employer.
Teacher	Dummy variable: 1 = teacher, 0 = otherwise
Black	Dummy variable: 1 = black, 0 = otherwise
Coloured	Dummy variable: 1 = coloured, 0 = otherwise
Indian	Dummy variable: 1 = Indian, 0 = otherwise
White	Dummy variable: 1 = white 0 = otherwise

Source: OHS 1995 – 1999 and LFS 2000 - 2007

Table 5 provides the summary statistics for the variables explained in table 10. The means and standard deviations for each of these variables are presented for teachers and non-teachers across the sample.

Table 5: Means (and standard deviations) of Variables

VARIABLE	GROUP		Total (N = 220 064 165)
	Teachers (N = 2 859 227)	Non-Teachers (N = 217 204 908)	
Log Hourly Wage	3.35 (1.18)	1.93 (0.63)	1.95 (1.18)
Primary	6.99 (0.16)	5.97 (2.12)	5.99 (2.11)
Secondary	4.96 (0.30)	2.78 (2.14)	2.81 (2.14)
Tertiary	2.92 (1.16)	0.27 (0.81)	0.30 (0.87)
Exp	18.79 (8.51)	21.96 (12.59)	21.92 (12.55)
Exp ²	425.62 (362.21)	640.87 (660.47)	638.03 (657.88)
Union	0.76 (0.43)	0.27 (0.44)	0.28 (0.45)
Female	0.64 (0.48)	0.41 (0.49)	0.28 (0.45)
Tenure	11.68 (8.43)	7.10 (7.75)	7.17 (7.79)
Teacher	1 (0)	0 (0)	0.01 (0.11)

Black	0.65 (0.48)	0.68 (0.47)	0.68 (0.47)
Coloured	0.06 (0.24)	0.11 (0.32)	0.11 (0.32)
Indian	0.04 (0.20)	0.04 (0.19)	0.04 (0.19)
White	0.24 (0.43)	0.16 (0.37)	0.16 (0.37)
Industry 1	0.00 (0.04)	0.12 (0.31)	0.11 (0.31)
Industry 2	0.00 (0.00)	0.05 (0.21)	0.05 (0.21)
Industry 3	0.00 (0.02)	0.15 (0.36)	0.15 (0.35)
Industry 4	0.00 (0.03)	0.01 (0.10)	0.01 (0.11)
Industry 5	0.00 (0.01)	0.06 (0.24)	0.06 (0.24)
Industry 6	0.00 (0.03)	0.21 (0.41)	0.21 (0.41)
Industry 7	0.00 (0.04)	0.05 (0.22)	0.05 (0.22)
Industry 8	0.00 (0.01)	0.09 (0.29)	0.09 (0.29)
Industry 9	0.99 (0.07)	0.19 (0.39)	0.20 (0.40)
Industry 10	0.00 (0.01)	0.08 (0.28)	0.08 (0.29)
Western Cape	0.10 (0.30)	0.14 (0.35)	0.14 (0.34)
Eastern Cape	0.15 (0.35)	0.11 (0.31)	0.11 (0.31)
Northern Cape	0.01 (0.11)	0.02 (0.15)	0.02 (0.15)
Free State	0.07 (0.25)	0.07 (0.26)	0.07 (0.26)
KwaZulu Natal	0.20 (0.40)	0.18 (0.39)	0.18 (0.39)
Northwest	0.07 (0.26)	0.07 (0.26)	0.07 (0.26)
Gauteng	0.19 (0.39)	0.26 (0.44)	0.26 (0.44)
Mpumalanga	0.06 (0.24)	0.07 (0.25)	0.07 (0.25)
Limpopo	0.16 (0.36)	0.07 (0.25)	0.07 (0.26)

Note: Own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

The summary statistics above indicate that the log hourly wages of teachers are somewhat higher than those of non-teachers – 3.35 in comparison to 1.93. Teachers have also acquired higher levels of education in primary, secondary and tertiary education than their counterparts in non-teaching professions. The values of experience (and therefore experience squared) are slightly lower for teachers than for non-teacher (18.79 years and 21.96 years, respectively), and some

76% of teachers are union members compared to just 27% of non-teachers. The teaching force is considerably more female than non-teaching professions, with 64% of teachers being female versus just 41% of non-teaching professions. Teachers have on average also remained with the same employer for longer than have non-teachers, with teachers having an average tenure of 11.68 years in comparison to 7.10 years for non-teachers. In terms of the racial composition the black and Indian component is almost identical for both teachers and non-teachers, with non-teachers having a slightly higher coloured component than teachers (11% of non-teachers are coloured compared to 6% of teachers), and teachers having a slightly higher white component than non-teachers (24% of teachers are white versus just 16% of non-teachers).

As mentioned above, teachers find themselves at the top of the education distribution. From the table, it may be seen that very few teachers have attained less than completed secondary schooling. For this reason, education is included in the augmented Mincerian wage function as a spline so as to enable in particular the investigation of the impact of tertiary education on log hourly wages. The fact that so few teachers have attained less than secondary education is likely to render the estimates of the impact on primary and secondary education on wages inaccurate.

3.4 EMPIRICAL RESULTS

Results from Mincerian regression

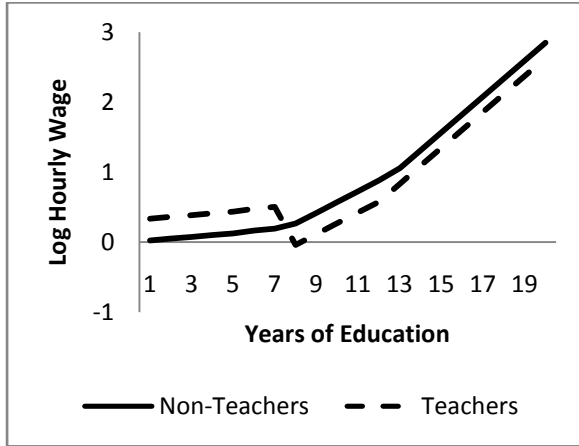
As mentioned above, the objective of this section of the paper is to investigate how teachers are remunerated relative to non-teachers in the labour market. Specifically, this section investigates how productive characteristics are rewarded amongst teachers and non-teachers, in order to ascertain whether or not any financial incentive exists for labour market participants with the highest level of educational attainment to enter the teaching profession.

The output for the augmented Mincerian wage functions run for this analysis is presented in tables A1 and A2 in the appendix.

3.4.1 Returns to Education

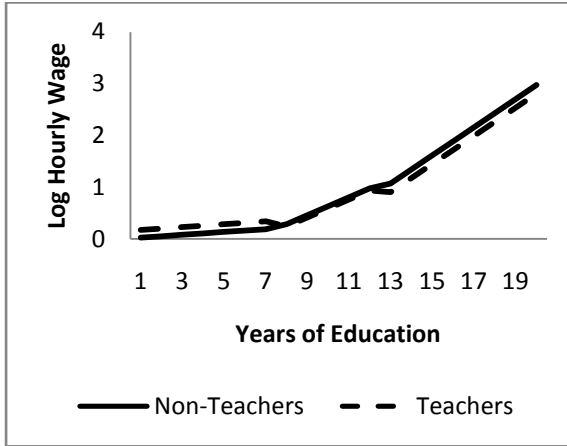
In terms of remuneration for educational attainment, figure 2 to 14 below present the results obtained from the wage functions run for the years 1995 to 2007, discussed above.

Figure 2: Returns to Education: 1995



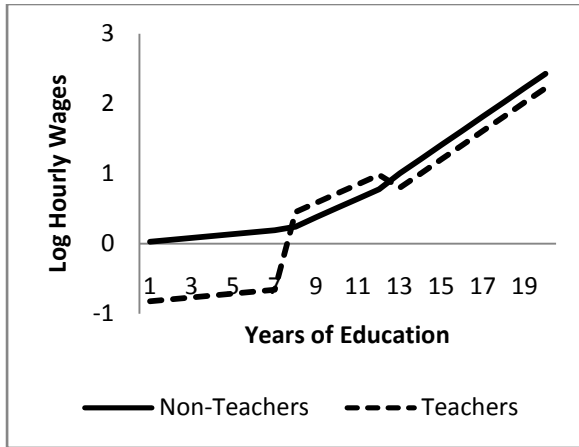
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 3: Returns to Education: 1996



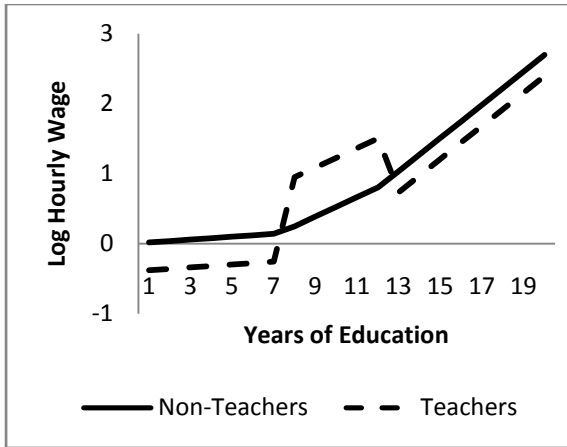
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 4: Returns to Education: 1997



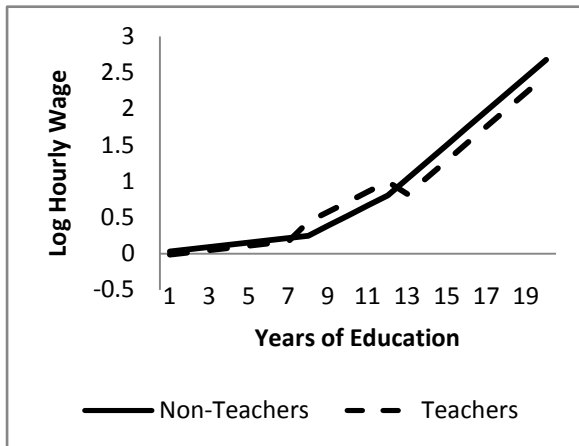
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 5: Returns to Education: 1998



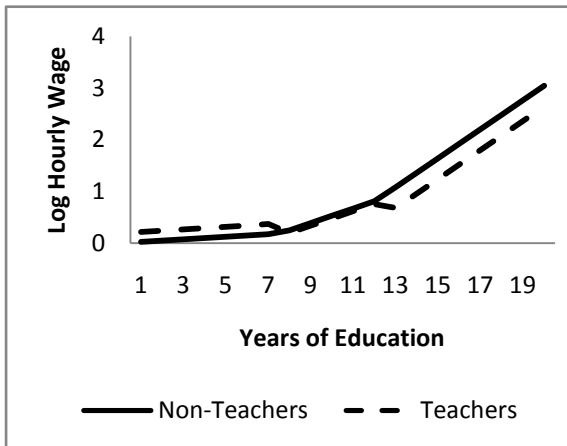
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 6: Returns to Education: 1999



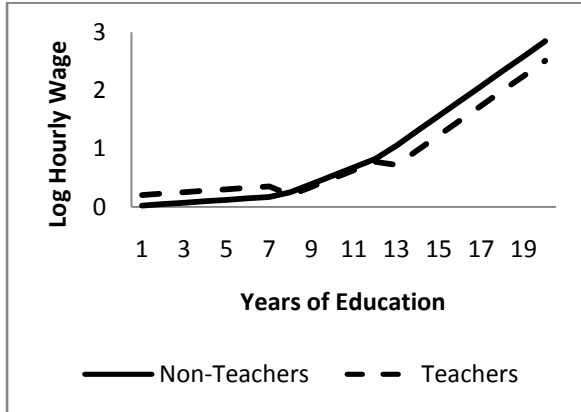
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 7: Returns to Education: 2000



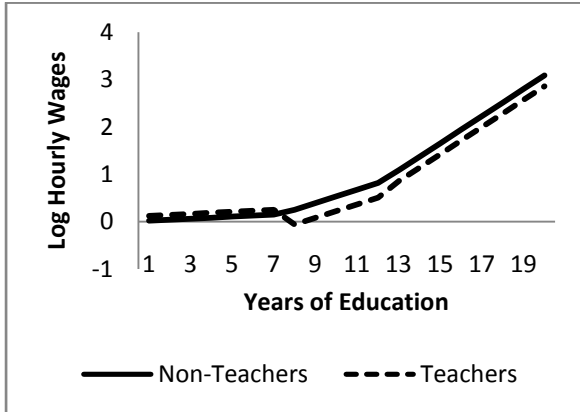
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 8: Returns to Education: 2001



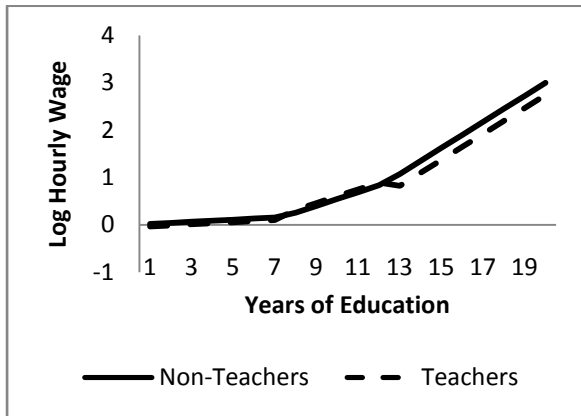
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 9: Returns to Education: 2002



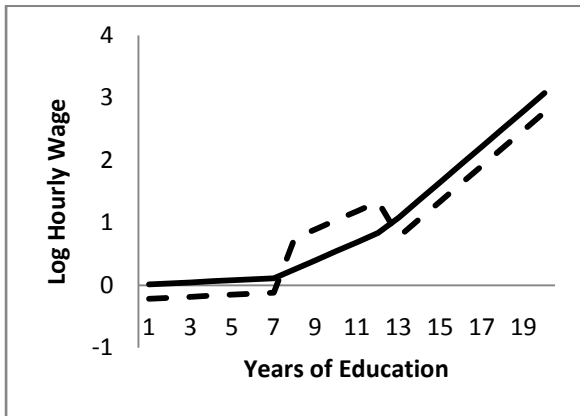
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 10: Returns to Education: 2003



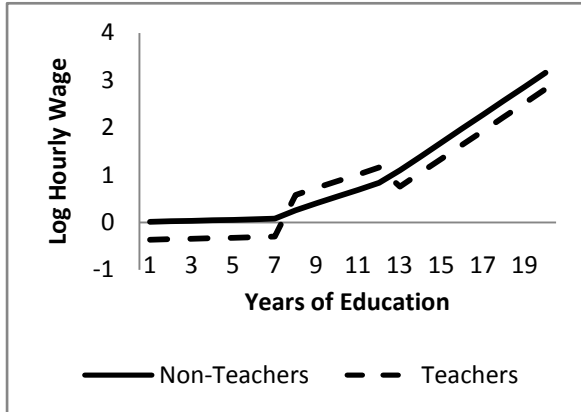
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 11: Returns to Education: 2004



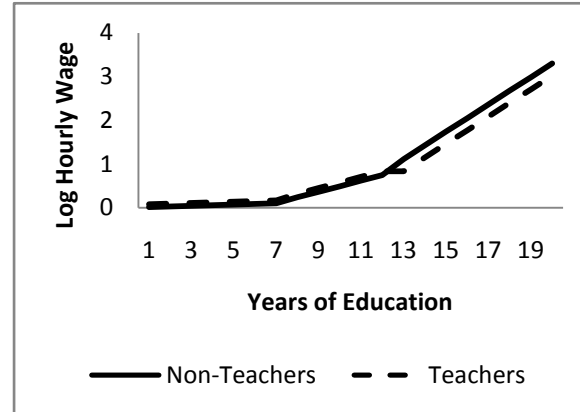
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 12: Returns to Education: 2005



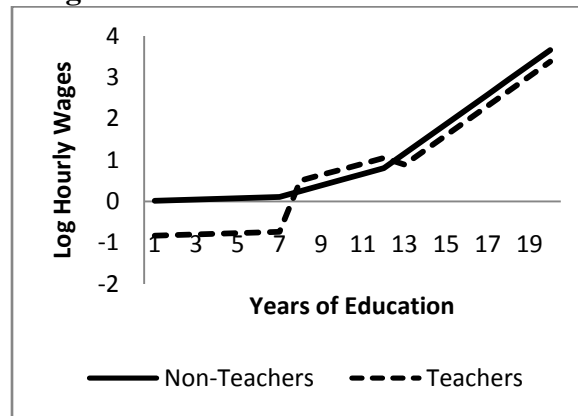
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 13: Returns to Education: 2006



Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 14: Returns to Education: 2007



Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

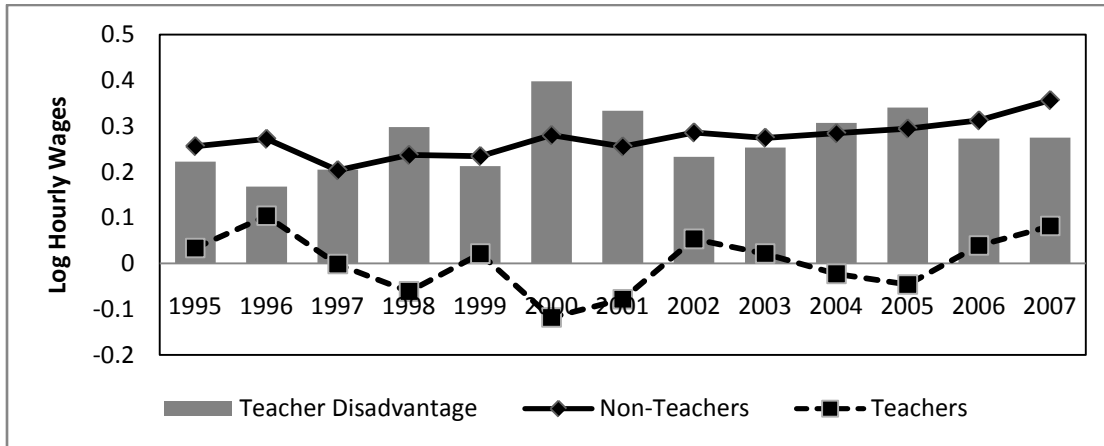
It must be noted that in the sample for which the regression is run (and indeed in the South African labour market), teachers generally find themselves at the top of the education distribution, with very few teachers having attained less than completed secondary education. The coefficient for these variables (i.e. the coefficients on the interactions terms for the various levels of education (*teacher x primary*, *teacher x secondary* and *teacher x tertiary*)) should be interpreted with caution. For example, it may be seen in the above figures that in the case of the returns of teacher to secondary education relative to those of non-teachers, the results are somewhat unstable over the period under investigation. This analysis focuses on workers at the higher end of the education distribution, however.

The returns to tertiary education for teachers are lower than they are for non-teachers in the South African labour market between 1995 and 2007, indicating that on average, the financial rewards of additional education at the highest level of education (and therefore amongst South Africa's most educated employed) is lower for teachers than it is for individuals in other professions. Indeed, teacher disadvantage in terms of returns to tertiary education has increased slightly over the years under investigation, as indicated in figure 15 below.

It is therefore clear that in terms of average returns to tertiary education, very little financial incentive exists for the most educated members of the labour force to enter the teaching profession. Indeed, the fact that labour market participants having attained this level of education

are likely to receive lower returns on average in the teaching profession than in other professions renders the teaching profession financially “unattractive” relative to non-teaching professions.

Figure 15: Returns to Tertiary Education (1995 – 2007)

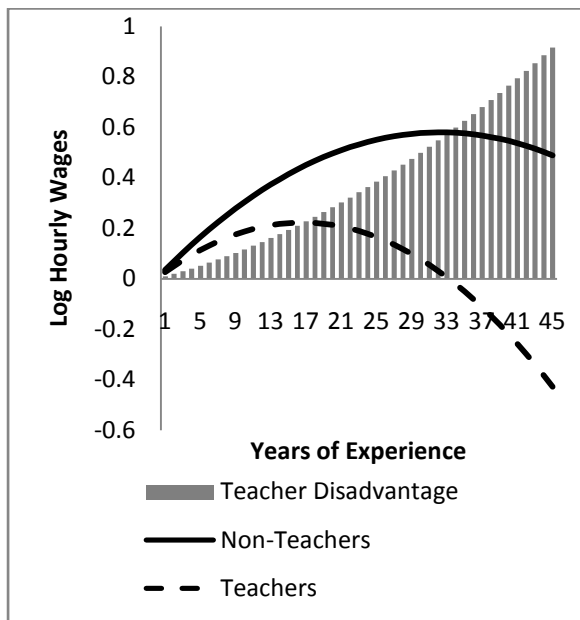


Note: own calculations from OHS 1995 – 1999 and 2000 – 2007

3.4.2 Returns to Experience

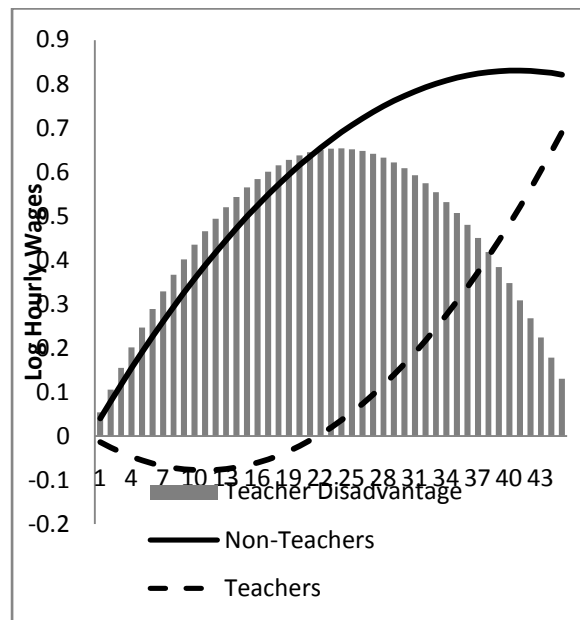
The Mincerian wage functions generated for this section of the study indicate that the returns to experience for teachers are lower than they are for non-teachers. Figures 16 to 28 below provide experience-earnings profiles for teachers and non-teachers.

Figure 16: Returns to Experience: 1995



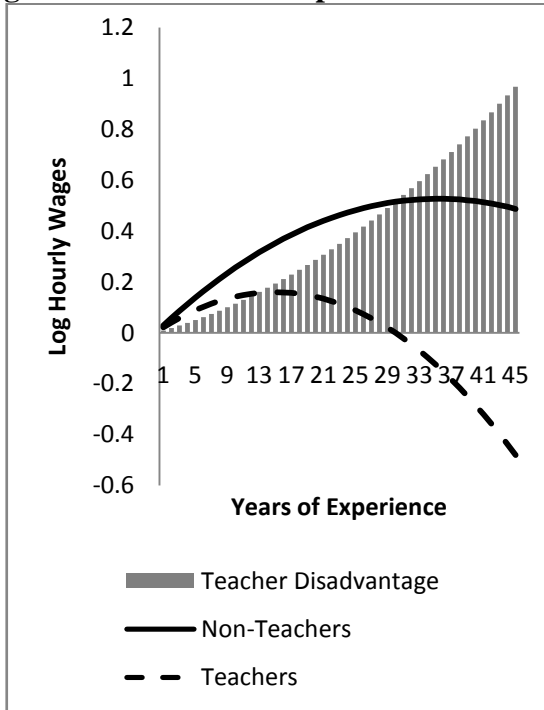
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 17: Returns to Experience: 1996



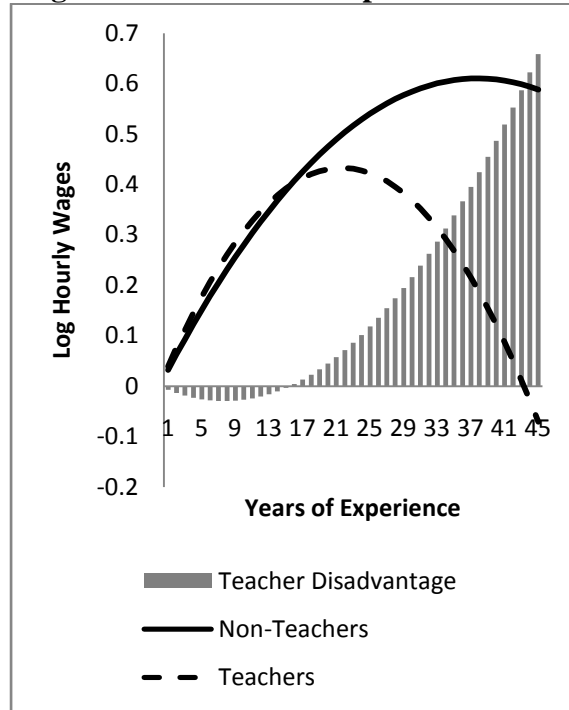
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 18: Returns to Experience: 1997



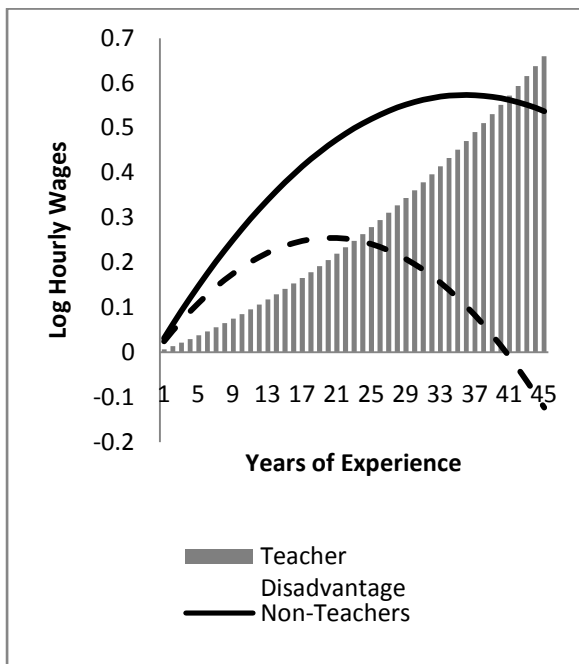
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 19: Returns to Experience: 1998



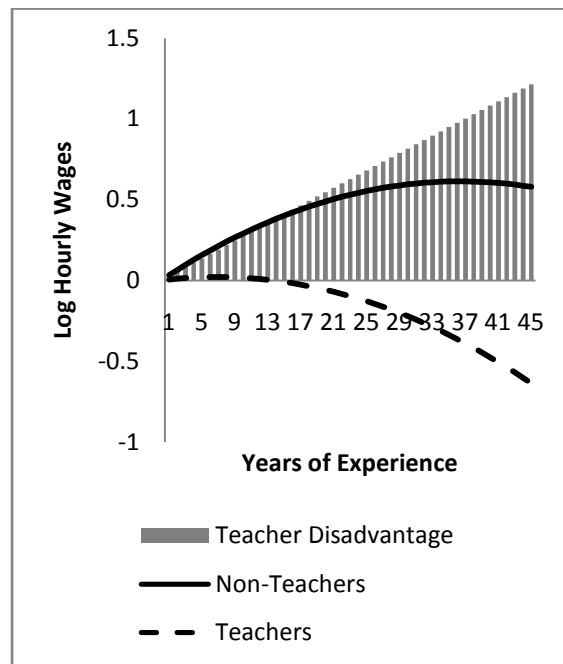
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 20: Returns to Experience: 1999



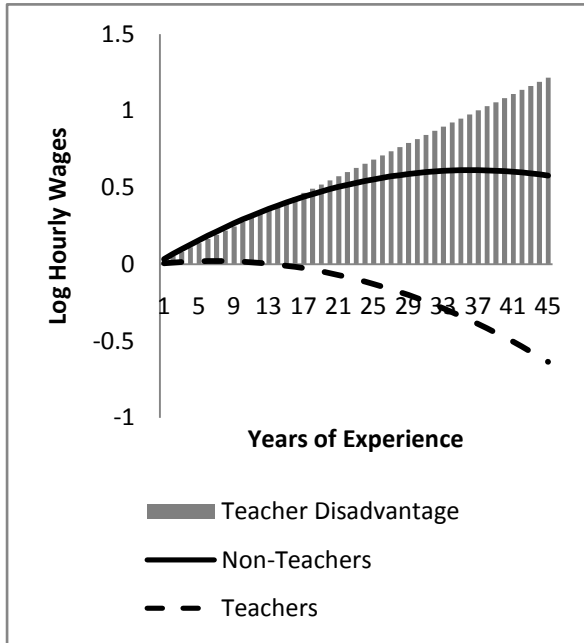
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 21: Returns to Experience: 2000



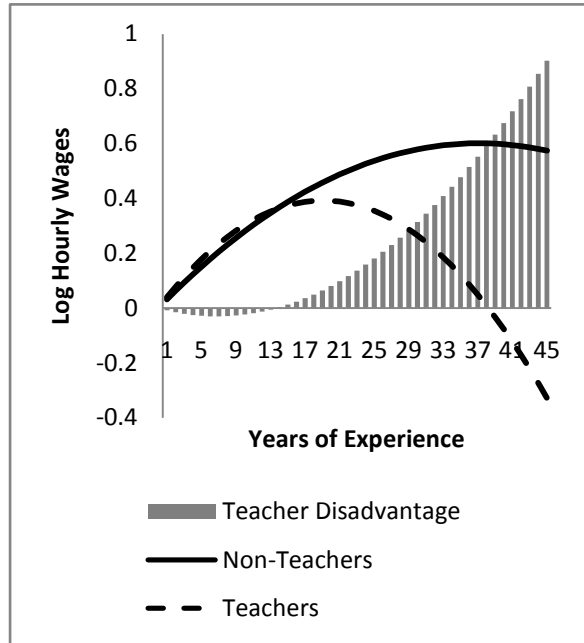
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 22: Returns to Experience: 2001



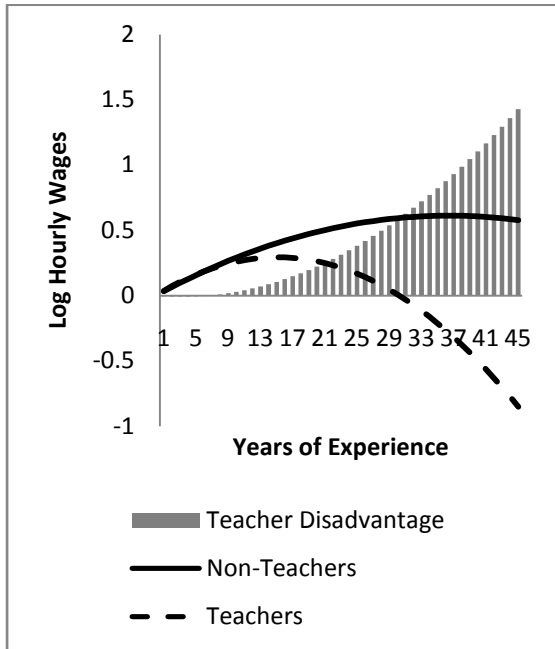
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 23: Returns to Experience: 2002



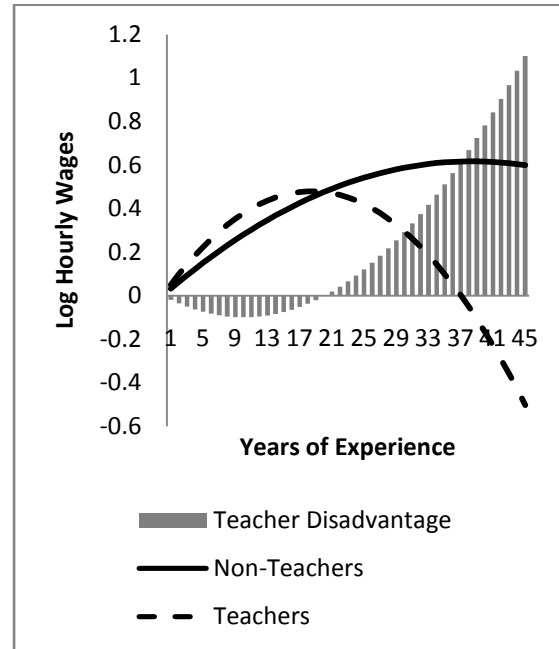
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 24: Returns to Experience: 2003



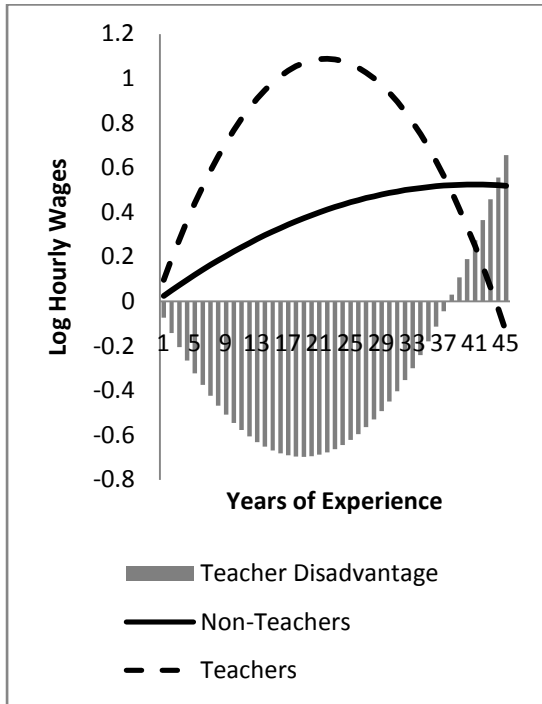
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 25: Returns to Experience: 2004



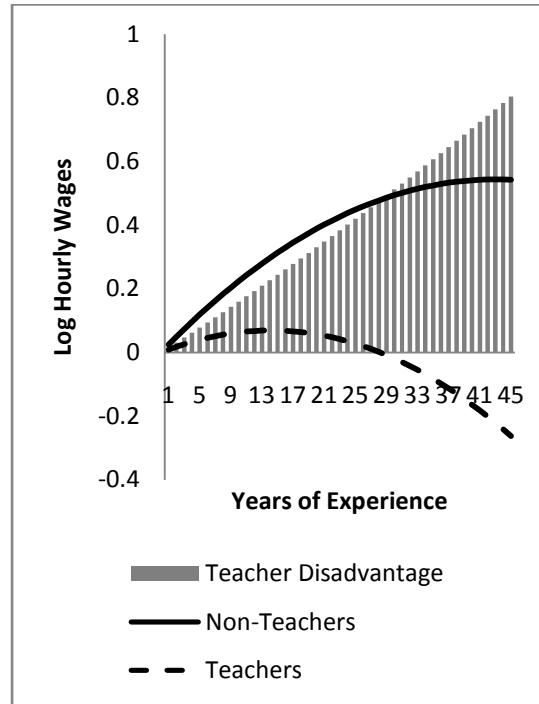
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 26: Returns to Experience: 2005



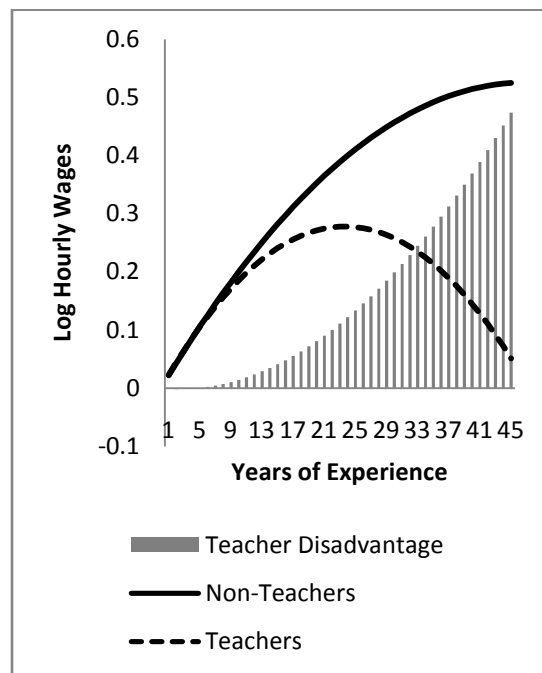
Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 27: Returns to Experience: 2006



Note: own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

Figure 28: Returns to Experience: 2007



Note: Own calculations from OHS 1995 – 1999 and LFS 2000 – 2007

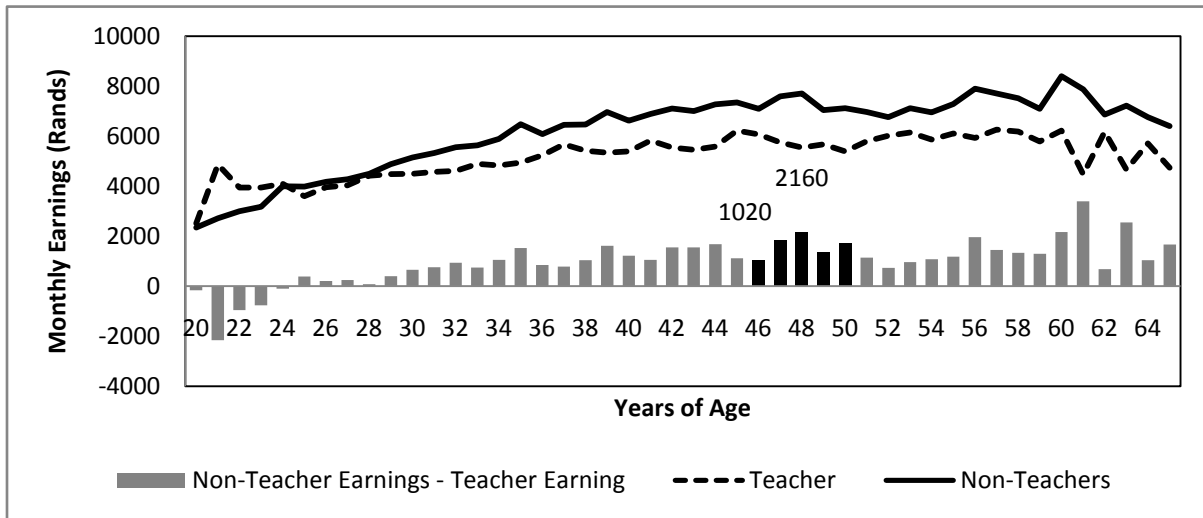
The figures above indicate that in terms of returns to experience, teachers are at a considerable disadvantage relative to non-teachers⁶. It is clear that firstly the returns to experience for teachers are positive and later become negative earlier than they do for non-teachers. Secondly, the “teacher disadvantage” increases with the number of years of experience in the labour market, indicating that the longer a worker remains in the teaching profession, the worse off they are relative to their non-teaching counterparts. It therefore becomes increasingly unattractive for teachers to remain in the profession as they gain more experience and the financial incentives for talented teachers to remain in the teaching force becomes gradually smaller the longer they remain there. This may prove distressingly problematic as the dismal performance of South African students indicates a desperate need for talented educators. The considerable disadvantage of teachers relative to non-teachers in terms of returns to experience is therefore an aspect of the teacher remuneration system that requires urgent attention.

A variable in the labour force data that is very closely correlated with experience is age⁷. Figure 29 presents an age-earnings profile for the teachers and non-teachers in the South African labour market between 2000 and 2005. The figure indicates that beyond approximately 23 years of age, monthly earnings for non-teachers are higher than those of teachers, with the gap appearing to widen marginally as age increases. In cases where teachers have obtained a university degree (i.e. approximately 15 years of education), they would be between 46 and 50 years of age by the time they had acquired between 26 and 30 years of teaching experience, assuming they entered the teaching profession after the completion of their studies and remained there. The figure indicates that the teachers of this age would earn considerably more in other professions (between R1020 and R2160 for the aforementioned range of teaching experience).

⁶ F tests revealed that with the exception of 1996 and 2005, the coefficient on experience and experience² were jointly significant.

⁷ Experience is calculated as (age – 6 – years of education completed).

Figure 29: Age-Earnings Profile for Teachers and Non-Teachers with Postsecondary Education: 2000-2007 (Monthly Earnings [2000 Prices]).



Note: own calculations from OHS 1995 – 1999 and 2000 – 2007

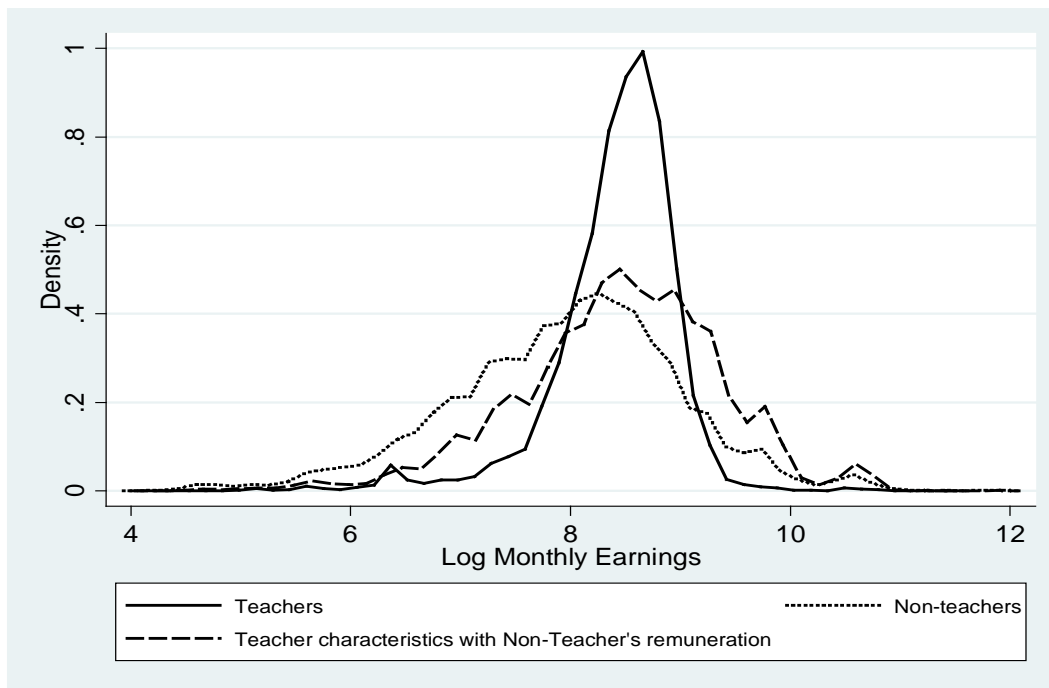
Up until the age of 28, the monthly earnings of teachers are greater than those of non-teachers in the labour market, indicating that young labour market entrants (graduates, in this case) may on average fare better in the teaching profession than in non-teaching professions. However, the gap between the monthly earnings of teachers and those of non-teachers increases in favour of non-teachers after the age of 23, indicating that the initial benefit (in terms of monthly earnings) of joining the teaching force dissipates with age – an observation that has considerable implications for which individuals are likely first of all to join the teaching force, and secondly to remain in the teaching force.

So far, the analysis has shown that the most highly qualified (in terms of educational attainment) individuals enjoy higher returns to education in non-teaching professions than in the teaching profession. Furthermore, workers outside the teaching profession appear to earn higher monthly earnings after the age of roughly 23 than do teachers. At this stage, it may therefore be said that in terms of the wage returns to education, very little incentive exists for workers with the highest levels of educational attainment to enter the teaching force, and for those who do, the early advantage in terms of monthly earnings of entering the teaching profession is unlikely to continue past the initial years in the profession. From the initial analysis, therefore the teaching profession does not appear to be a financially attractive option for workers having attained the highest levels of education.

3.4.3 Lemieux Decomposition of Earnings Distributions

The Lemieux decomposition explained in section 3.1.2 is used to compare the earnings of teachers to those of non-teachers at all points in the earnings distribution and not just at the mean as is the case with the augmented Mincerian wage function. The results are presented in figure 30 below.

Figure 30: Decomposition of Teacher and Non-Teacher Monthly Earnings Distributions (2000 prices): 1995 – 2007



Note: own calculations from OHS 1995 – 1999 and 2000 – 2007. Excludes workers with less than 12 years of education (secondary education), self-employed workers, informal sector workers and workers earning more than R200 000 per month.

Figure 30 indicates that teachers experience higher monthly earnings than non-teachers. However, the earnings of non-teachers are much more widely dispersed than those of teachers. From the figure we also see that if teachers were remunerated in the same way as non-teachers, the distribution of wages would be a much more widely dispersed, though still higher than that of non-teachers, given the higher educational attainment and smaller variance in educational attainment of teachers relative to non-teachers.

Section 2 of the paper explained that “wage compression” occurred amongst South African teachers in the 1990s, with teachers at the lower end of the salary scale receiving wage increases substantially larger than those of teachers at the upper end of the salary scale. This is likely to explain the lack of dispersion amongst teacher wages over the period 1995 to 2007 for which the kernel density functions have been drawn. The wider distribution that would occur if teacher characteristics were remunerated in the same way as those of non-teachers is therefore likely to reflect a wage structure that provides greater financial incentives for the most qualified workers to enter the teaching profession, since they are rewarded more generously for their relatively higher endowments.

Table 6 below presents a comparison of teacher monthly earnings with those that teacher would have received had they been remunerated according to the same wage structure as that experienced by non-teacher at different points in the earnings distribution.

**Table 6: Actual and Simulated Teacher Monthly Earnings across the Income Distribution:
1995 - 2007**

Quintile ⁸	Actual teacher earnings	Teacher earnings if remunerated as non-teachers	Teacher premium
1	1 945	295	152%
2	3 903	530	86%
3	5 015	2 004	60%
4	6 099	8 300	-36%
5	8 289	18 562	-55%

Note: own calculations from OHS 1995 – 1999 and 2000 – 2007. Excludes workers with less than 10 years of education (grade 12), self-employed workers, informal sector workers and workers earning more than R200 000 per month.

Table 6 makes it clear that the advantage of entering the teaching profession diminished for workers with higher levels of educational attainment. Insofar as higher educational attainment is rewarded with higher remuneration, resulting in the most educated members of the labour force forming the top end of the wage distribution, the teaching profession may well be an attractive occupation for workers at the lower end of the skills distribution, but may prove to be a relatively unattractive option for workers at the higher end of the skills distribution since. The wage structure of the South African teaching force is therefore not conducive to attracting the most highly qualified members of the South African labour market.

⁸ Quintiles are constructed using real monthly earnings.

4. SUMMARY AND CONCLUSION

This wage analysis revealed that returns to tertiary education amongst teachers are lower than those of their non-teaching counterparts in the South African labour market. In fact, this “teacher disadvantage” appears to have followed an increasing trend over the last decade. Similarly, teachers experience lower returns to labour market experience relative to non-teachers in the South African labour market. Importantly, the gap between the returns to experience for teacher and non-teachers increases as the number of years of labour market experience increases, implying that the longer teachers remain in the profession, the greater the disadvantage they are likely to experience in terms of returns to labour market experience.

The Lemieux decomposition and the monthly earnings simulated from the reweighted wage distribution also revealed that the teaching force is likely to be an attractive profession for workers at the lower end of the skills distribution and an unattractive profession for workers at the higher end of the skills distribution.

The wage structure of teachers in the South African labour market is therefore not conducive to attracting workers who may be considered to be endowed with above average productive characteristics. The 2008 amendments to the teacher remuneration system may prove useful in remedying this situation to a certain extent. However, it remains an area requiring attention in the underperforming South African schooling system.

5. APPENDIX

Table A1: Regression Estimates for Augmented Mincerian Wage Function on Log Hourly Wages: 1995 – 2000

VARIABLE	YEAR					
	1995	1996	1997	1998	1999	2000
Primary	0.025 (0.002)**	0.027 (0.005)**	0.027 (0.003)**	0.020 (0.005)**	0.031 (0.004)**	0.025 (0.003)**
Secondary	0.154 (0.003)**	0.173 (0.005)**	0.133 (0.004)**	0.139 (0.005)**	0.139 (0.005)**	0.139 (0.003)**
Tertiary	0.256 (0.007)**	0.272 (0.011)**	0.203 (0.008)**	0.237 (0.011)**	0.234 (0.009)**	0.280 (0.007)**
Teacher x Primary	0.310 (0.337)	0.149 (0.195)	0.099 (0.123)	-0.396 (0.394)	-0.043 (0.252)	0.198 (0.301)
Teacher x Secondary	-0.305 (0.447)	-0.039 (0.291)	0.208 (0.068)**	0.702 (0.542)	0.192 (0.357)	-0.047 (0.424)
Teacher x Tertiary	-0.222 (0.048)**	-0.168 (0.069)~	-0.205 (0.031)**	-0.298 (0.101)**	-0.213 (0.046)**	-0.398 (0.045)**
Exp	0.036 (0.001)**	0.041 (0.002)**	0.030 (0.008)**	0.032 (0.002)**	0.035 (0.002)**	0.032 (0.002)**
Exp²	-0.001 (0.000)**	-0.001 (0.000)**	0.000 (0.000)*	0.000 (0.000)**	0.000 (0.000)**	0.000 (0.000)**
Teacher x Exp	-0.009 (0.015)	-0.055 (0.032)~	-0.009 (0.016)	0.008 (0.050)	-0.001 (0.025)	-0.007 (0.017)
Teacher x Exp²	0.000 (0.000)	0.001 (0.001)	0.000 (0.000)	0.000 (0.011)	0.000 (0.000)	0.000 (0.000)
Union	0.134 (0.009)**	0.230 (0.017)**	0.171 (0.012)	0.329 (0.018)**	0.262 (0.015)**	0.277 (0.012)**
Female	-0.235 (0.009)**	-0.246 (0.016)**	-0.222 (0.012)**	-0.211 (0.017)**	-0.221 (0.014)**	-0.165 (0.011)**
Tenure	0.012 (0.005)**	0.013 (0.001)**	0.012 (0.001)**	0.012 (0.011)**	0.013 (0.001)**	0.016 (0.001)**
Teacher	4.278 (0.004)**	5.25 (0.015)*	0.945 (0.784)	1.017 (0.007)**	0.997 (0.011)*	0.904 (0.002)**
N	9 229 317	8 966 307	9 093 647	9 356 751	10 339 635	24 067 848
Adjusted R²	0.64	0.57	0.52	0.55	0.52	0.58

*Note: own calculations from OHS 1995 – 1999 and 2000 – 2007. The province in which a worker works, the industry in which they are employed and the race group to which they belong are controlled for in the above regressions. The reference groups is nonunionised black male workers employed in the Western Cape in non-teaching professions in the agriculture, hunting, forestry and fishing industry with no education, no labour market experience. ** - significant at 1% level; * - significant at 5% level; ~ - significant at 10% level. Standard errors are reported in parentheses.*

Table A2: Regression Estimates for Augmented Mincerian Wage Function on Log Hourly Wages: 2001 – 2007

VARIABLE	YEAR						
	2001	2002	2003	2004	2005	2006	2007
Primary	0.025 (0.002)**	0.021 (0.002)**	0.022 (0.003)**	0.016 (0.003)**	0.011 (0.003)**	0.015 (0.003)**	0.016 (0.004)**
Secondary	0.142 (0.003)**	0.141 (0.003)**	0.145 (0.003)**	0.146 (0.003)**	0.144 (0.003)**	0.128 (0.003)**	0.138 (0.003)**
Tertiary	0.255 (0.005)**	0.286 (0.005)**	0.274 (0.005)**	0.284 (0.005)**	0.295 (0.005)**	0.312 (0.005)**	0.357 (0.005)**
Teacher x Primary	0.182 (0.031)**	0.292 (0.144)	-0.060 (0.243)	-0.230 (0.106)*	-0.378 (0.145)**	0.069 (0.096)	-0.848 (0.663)
Teacher x Secondary	-0.047 (0.014)**	-0.315 (0.206)	0.055 (0.128)	0.495 (0.149)**	0.325 (0.124)**	0.089 (0.134)**	0.248 (0.136)
Teacher x Tertiary	-0.333 (0.050)**	-0.233 (0.055)**	-0.253 (0.056)**	-0.307 (0.037)**	-0.341 (0.028)**	-0.273 (0.026)**	-0.275 (0.023)**
Exp	0.034 (0.011)**	0.032 (0.001)**	0.034 (0.001)**	0.032 (0.001)**	0.026 (0.001)**	0.025 (0.001)**	0.022 (0.001)**
Exp²	0.000 (0.000)**	0.000 (0.000)~	0.000 (0.000)**	0.000 (0.015)	0.000 (0.000)**	0.000 (0.000)**	0.000 (0.001)**
Teacher x Exp	-0.028 (0.015)	0.009 (0.009)**	0.005 (0.015)	0.020 (0.000)**	0.074 (0.014)**	-0.015 (0.014)	0.001 (0.018)
Teacher x Exp²	0.000 (0.000)	-0.001 (0.008)**	-0.001 (0.000)~	-0.001 (0.009)**	-0.002 (0.000)**	0.000 (0.000)	0.000 (0.000)
Union	0.301 (0.009)**	0.314 (0.001)**	0.307 (0.009)**	0.319 (0.008)**	0.293 (0.010)**	0.294 (0.010)**	0.201 (0.010)**
Female	-0.168 (0.008)**	-0.158 (0.003)**	-0.171 (0.008)**	-0.170 (0.001)**	-0.168 (0.009)**	-0.157 (0.008)**	-0.162 (0.009)**
Tenure	0.016 (0.001)**	0.016 (0.001)**	0.017 (0.005)**	0.017 (0.007)**	0.018 (0.011)**	0.014 (0.000)**	0.018 (0.001)**
Teacher	0.907 (0.014)**	1.003 (0.003)**	0.913 (1.510)	0.988 (0.017)**	1.274 (0.719)~	1.014 (0.007)**	5.190 (0.007)**
N	23 391 475	22 858 513	22 691 464	22 967 405	19 594 595	20 428 201	16 805 947
Adjusted R²	0.62	0.64	0.63	0.62	0.53	0.55	0.53

*Note: own calculations from OHS 1995 – 1999 and 2000 – 2007. The province in which a worker works, the industry in which they are employed and the race group to which they belong are controlled for in the above regressions. The reference groups is nonunionised black male workers employed in the Western Cape in non-teaching professions in the agriculture, hunting, forestry and fishing industry with no education, no labour market experience. ** - significant at 1% level; * - significant at 5% level; ~ - significant at 10% level. Standard errors are reported in parentheses.*

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