TRAINNG AND CONTRACT ASSIGNMENTS: SCREENING PACKAGES, IN SOUTH AFRICA'S PRIVATE SECTOR?

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Abstract

This paper investigates the supposition that under information asymmetries, private sector enterprises in South Africa utilise workers' participation in job-related training coupled with assignment to different contract types, as a screening devise. The September 2004, LFS data is used. Based on the Oaxaca (1973) residual difference methodology, the participation in job related training (or no-participation) gap is decomposed to isolate the observed –productivity-component from the screening, subjective one. Screening is shown to be rampant in employment recruitments process, in the private sector as a whole. At the disaggregated contract type level, the extent of screening is shown to be less than at the pooled private sector level. The degree of inter-contract screening is however greater in the more (less) secure permanent (temporary) contract type. There is no evidence of screening towards the observation, fixed period contract.

JEL classification: J41, J23, J24, J31, D82, D81, I21.

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1 Introduction

Two main perspectives exist regarding the use of human capital accumulation. Firstly, is those that attribute the difference in income to education-yielded marketable skills (the human capital theorists), and second, those that perceive education entirely in its informative role (strong-screening theorists); as a device that unveils individual's innate qualities. There is but also a compromise stance that combines aspects from the human capital and screening schools, in different proportions (weak- screening theorists).

Employers that ascribe to the screening hypotheses base themselves on an individual's level of human capital accumulation -a signal of a worker's productivity potential- while recruiting and efficiently utilising labour in their production processes. Informational returns that accrue from human capital accumulation thus (partially)[2] manifest in assignment of jobs appropriately (Wolpin,

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[2] In case of the weak-screening hypothesis.

1977, 949). Analogously, this study investigates whether acquisition of job-related-training (JRT)[3] (in addition to, or as formal schooling) is utilised by employers for its informational disclosing quality while assigning workers to the different employment contracts. Acquisition of JRT is assumed to constitute an information advantage facilitating securing of the most secure contract type[4], and vice versa. The screened advantage is expected to be captured by the differential not accounted for by the personal, observable characteristics, i.e. the residual part in the estimations.

Workers whose formal education includes courses that are job related, as well as those that accept to undergo on-the-job training[5], are here assumed not to be a random sample of workers. Formal education with a direct job related aspect (such as medicine, accounting and engineering) is mostly awarded to high ability students who self select themselves from the masses by passing high school examinations with high grades. Similarly, it is workers confident of their ability to pass, and who are optimistic of the education rewards in the future, that can invest in observational/training contracts at a reduced pay while the course lasts. This collective of high ability workers is likely to exhibit minimal propensity to quit studies or work, or to be absent at either (Weiss, 1995). The group would thus constitute the more sought after labour category, for firms minimising production costs amid rampant information asymmetries.

With individuals differing in unobservable but desirable attributes, while accumulation of human capital, e.g. acquisition of JRT, is believed to be strongly correlated with the desirable but non-observable constituents of perseverance, and when contract type embrace varying financial and legal implications, it is assumed that firms (faced with information asymmetries, risks, and local inflexibilities regarding termination of workers contracts) utilise the human capital informational/sorting quality while entering into contracts with workers. Employers are expected to utilise a worker's attainment of JRT to infer one's desirable innate traits, with the aim of minimising a firm's production costs; such as, being forever being stuck with slack but permanent employees.

[3] The training referred to in this study is taken to be *job-related-training* (JRT), since the September 2004 Labour Force Survey (LFS) asks whether the interviewee 'has been trained in skills utilisable at work'. What the survey does not however precisely state is whether training occurred on, or off-the-job, whether it was formal or not, and whether it occurred with the current or previous employer. No mention is made either regarding the date when the training spells were conducted, nor whether the training was completed. Job-related-training is henceforth mostly referred to as JRT or simply as training.

[4] The permanent contract type is considered to be more secure than the fixed period contract, temporary contract or the seasonal and causal contracts.

[5] Which on-the-job training is certainly job related.

The entire process entails contract ladders (permanent, fixed period, temporary, seasonal and causal), with some being internships.

Many models, of the Up-or-out contract type, are in place to explain intricate relationships involving; accumulation of human capital, for a heterogeneity worker force, amid information asymmetry, the employment contracts that result thereof, and the differing wage offers. A worker's bargaining power is shown to be embedded in i) her[6] right to join, quit or stay in employment, ii) labour unions and iii) state protection, while the employer's counter force lies in the decision to retain or fire a worker basing on the worker's realised true productivities. Examples of such models include those by: Malcomson, Maw and McCormick, 2003; Waldman, 1990; Kahn and Huberman, 1988; and Harris and Raviv, 1978.

Malcomson *et al.* (2003), analyse the intricate relationship elucidated in the above paragraph, in the context of apprentiship contracts with dual (worker and employer) information asymmetry, concerning a worker's productivity. By use of a contract, firms get committed to offer higher and competitive wages to trainee-workers retained after successfully completing general on-the-job (OJT). The implementing firm is shown to enjoy better profits. The participating worker has her desirable productivity signalled by the act of the firm with which she is currently in employment, retaining her. In case the worker eventually quits, external firms would have benefited from an earlier employer's retention act. Thus the worker's quitting involves no penalty. The higher wage paid after successfully completing training, is also not determined through bidding by prospective, 'second-hand' employers, but enforced by the prior signed contract, being implemented for those retained. The improved efficiency embraced in the above, holds only when the apprentiship length is regulated.

Waldman (1990) also allows a worker to accumulate human capital under an Up-or-Out type of contract. The nature of information asymmetry handled here is between the initial, and eventual, employers. The initial employer, in a diffuse manner, acquires private information concerning the worker's genuine productivity. When the employer retains the worker, other prospective employers

[6] Here, and elsewhere in this paper, the pronoun 'her' refers to a person irrespective of sex. However, for brevity the '/he' is muted.

perceive the act as a signal that the worker is productively reliable. A process of inter-firm bidding commences, yielding a better wage for the better ability worker. The better pay is thus not just a product of a worker acquiring tenure, but of inter-firm poaching and bidding competition. The plenty and quick movements across jobs by the well educated natives in South Africa provide a possible result of the above described scenario. It is the excess in demand for the well trained (that prove to be more efficient at work), over the supply, that facilitates workers' vertical movements and the accompanying higher wages.

Deviating from accumulation of general human capital, as in the two models explained above, Kahn and Huberman (1988), analyse accumulation of firm-specific human capital, with two sided uncertainty regarding a worker's productivity, thus rendering both employer and employee susceptible to moral hazard. The employer offers a wage which is higher than the worker's opportunity cost, to lure the worker into investing in human capital. The worker however loses all (gets fired) if the employer discovers that her true productivity falls below that anticipated. The right to hire or fire serves to maintain the incentive system, since it debars employers from understating the worker's true productivity, to other aspiring employers. The current labour laws[7] generally deprive employers of the effective right to hire and fire, much as employers are faced with vast information asymmetries regarding workers true productivities.

The above literature highlights what practically happens in the labour market. However, absence of data on aspects such as worker retention, elimination, employment history and competition for employees by different firms, disallow estimations of the above described up-or-out contract models, in the South African context.

The intricate analysis is narrowed down to self selection models by Salop and Salop (1976) and Guasch and Weiss (1981). Salop and Salop (1976) model a work situation with employers (employees) unaware (aware) of worker's (their) perseverance qualities. Workers are offered wages that increase with tenure, so as to minimise labour turnover and re-training costs. Similarly, Guasch and Weiss (1981) illustrate a self selection model with single sided information asymmetry, where workers –but not their employers- are aware of their true productivities. The privately known

[7] Explained further under the background to the study.

productivities happen to be positively correlated with precisely measurable productivities. Through witty contract designs, (with firms retaining the right to fire failures) employers unveil the privately known productivities using a package of measurable productivities such as education and training, and wages.

The above strategy culminates in only the more able workers accepting the probation/testing conditional contract. It yields better profits for the employer. It supersedes other strategies such as i) testing all applicants without a reduction in wage, ii) hiring only the less able without testing them, iii) or hiring randomly without testing. This self-selection strategy however has a flaw in that it can not exclude wealthy but less able workers, if they constitute (as they commonly do, more so in South Africa) a small fraction of the worker force. The strategy only excludes the bigger group that is usually made of the poor and less able workers.

The above theoretical literature clearly illustrate that employers –faced with information asymmetries regarding workers' productivities- commonly design human capital accumulation/contract packages in a manner to unveil the genuine productivities. The right to hire or fire is a component of this intricate productivity unveiling and discipline ensuring mechanism. What happens regarding contract assignment and human capital accumulation in South Africa; where there are plenty of information asymmetries and a restricted right to fire workers, is yet to be told.

The objective of this study is thus to assess the impact of job-related-training (JRT) and education on an individual's contract-type attainment probability, amid information asymmetries. The study is specifically charged to establish whether JRT is utilised by employers in South Africa's[8] private sector as a screening device while assigning workers into specific contract. Answers are sought to the following problems:

i) Who is receiving job-related-training? Are workers offered JRT fundamentally different from those that are not?

[8] There is so far no evidence of empirical studies on human capital accumulation and contract assignments, in South Africa.

ii) What determines participation in job-related-training?

iii) Are different contracts assigned to different sets of workers?

iv) What relationship exists between schooling credentials and a) job-related-training, and b) contract attainment?

v) Do private sector employers utilise participation in JRT as a screening device when assigning workers into the different contract types?

It is assumed that under information asymmetries, the better one's credentials, the more likely is that worker to have received job-related-training, and the less likely is that person to end up with some insecure contract type; such as, a temporary, causal or seasonal contract. That the more able workers but who for some reason do not attain JRT through formal schooling, would to be screened through offers of observational (and less financially involving); fixed period contracts, coupled with self-selected participation in job-related-training. A strong relationship is thus expected between participation in job-related-training and fixed period contracts.

The rest of the study is arranged as follows. The circumstances that compel firms to institute witty contract designs are explained in the background to the study, in section 2. The data and methodology are described in section 3. The findings are given in section 4, followed by the concluding remarks in section 5.

2. Background

Under traditional equilibrium economic theory all individual workers are assumed to be productivity-homogeneous, operating in a Pareto-Efficient yielding allocation of labour market resources. In reality; labour markets world wide are full of information asymmetries regarding workers' productivities and imperfections in resource allocations. These imperfections and information asymmetries are in part a product of economic histories and institutional establishments.

In South African sources of labour market imperfections and information asymmetries include among others: apartheid-nurtured racially-inclined heterogeneity regarding a worker's mental or physical productivities, government interference through entry and exit policy, laws enforcing/addressing worker-employment-security, and workers' rights concerning health

information. Labour unions' influence on market operations is considerable. There is also the impact of the HIV/AIDS pandemic. Unemployment is thus rampant; demand for and supply of, labour varies across labour categories.

To date, South Africa's apartheid background still manifests in race inclined prominences in the labour markets. For instance, the pattern of occupation distributions is traceable back in the apartheid education design. Managerial posts remain dominated by white workers, while Africans monopolise the unskilled/labourers' category (Bhorat and Lundall, 2004:1028). White males are over represented in occupations such as the professional, technical and craft. The apartheid background with its heterogeneous labour produce renders government intervention into labour market operations, necessary[9]. Labour productivity transcends racial differences. Government may for instance humanise the labour market; allow for a more competitive environment, offer security to workers or ensure equal schooling opportunities for all; aspects which were scarce during apartheid.

The apartheid education design yielded undesirable (racially biased), labour heterogeneity and social inequality. The poor, had their education aspirations also hindered by imperfections in the money markets, thus sustaining the vicious cycle of the unskilled population groups. There are currently attempts to address past imbalances. For instance, many universities have now been merged, with the then second best and practically inclined *technikons* being superficially upgraded into universities. But the deep rooted damage persists and is revealed by the decade old democratic government still seeking growth remedy from skilled South African white; abroad, at home or previously retrenched (Boyle, 2005). Slow growth in the labour quality of the previously disadvantaged population groups, continues.

There is then the impact of the current health epidemic. HIV/AIDS amplifies the labour and health maintenance, costs, as well as possibly leads to increased preference for capital over labour. This *may* account for the low rate of job creation. The pandemic contributes to labour heterogeneity, on

[9] It is typical that an economy that has had a history such as apartheid does not discard its discriminative practices instantaneously as political change occurs. The markets do not change from heavy concentration and dominance to an instant, and perfectly clearing market. Hence the need for government's regulatory role.

age, gender, social class and possibly race grounds. For instance, the age category most hit by HIV/AIDS is that of the working-age adult (Kitahata et al., 1996; Boseley, 2002: 1; Fox et al., 2003). Laws set towards the pandemic also perpetuate information asymmetry. Employers are not at liberty to test workers for their HIV status, or to use such status in a manner that discriminatively influences employment decisions.

Then comes the newly enacted labour policy intended to address apartheid discrepancies. Examples include extensive protection of employees against unfair dismissal and the minimisation of retrenchments, the mandatory transfer of workers to a new business owner, and the extension of bargaining council agreements to non parties/employers so long as they fall within the scope of the bargaining council.

The labour policy of the 90's, occasion a negative impact on both the cost and flexibility in the work place (Barker, 1999: 13). The policy is a heavy burden on investment and the decision to employ. It scares private employers away from offering permanent contracts. The employer's power which lies in the decision to retain or fire a worker basing on the worker's realised true productivities, is eroded. According to Stiglitz, (1975a), the right to fire is a discipline mechanics in a work environment. It is also part and parcel of the incentive system (Kahn and Huberman, 1988). With the restrictive labour laws, private employers may substitute capital for labour, utilise sub contractors or employ workers on fixed-term contracts only (Barker, 2003: 81). Bhorat and Lundall, (2004:1030) disclose significant and rapidly increasing trends towards part-time employment, between 1994 and 1998. The impact of labour legislation on private firms' employment decisions is cited among the main causal factors. The skills development policy however has an escape clause (likely to be exploited using the fixed period training contracts). Firms have a right to terminate employment of workers who fail to reach the desired productivity level, during training.

The above, together with other factors such as low economic growth (until very recently), have yielded increasing unemployment. The most affected have been fresh aspirants trying to enter the labour market. Paton (2006:24) reports that the number of unemployed graduates is increasing because' i) they lack the crucial[10] as well as 'soft[11]' skills, sought after by top businesses. The

[10] Skills such as computer proficiency, needed in today's information technology era.

degrees/diplomas pursued equip aspirants with skills, unvalued by employers. The rate at which fresh graduates enter the unemployment pool by far exceeds that at which employment is created; i.e. the labour absorption rate. About 2.6 per cent of the *highly* educated -university and technikon[12] graduates are unemployed (*Ibidem*). The unemployed are increasing being made of the youth and educated. The overall result is an employment rate of about forty per cent (7 million) using the expanded definition (Bhorat, 2004:946), with an approximately ten per cent margin to the conservative, strict definition/estimation.

Given the above scenario, offering fresh entrants a chance to prove themselves through conditional contracts coupled with job-related-training, sounds a jackpot. On the side of employers, while general human capital accumulation is mobility increasing and thus risk increasing, specific education (to which job-related-training is assumed to be a proxy) is mobility and risk reducing.

At the national level, a highly skilled work force is a necessity for a country's sustained growth (Booth, 1991: 281). The skills on which the economy depends are largely products of the processes of education and training (Greenhalgh and Stewart, 1987: 171). Lynch (1992: 299) mainly attributed the slow productivity growth rate, in U.S. as compared to Japan and German, to firm training decisions, and U.S. training policy. Employers' in the private sector have thus a major role to play in enabling attainment of this skilled work force, if slow growth in productivity is to be curbed. There is thus the need to establish who -among employees in the private sector- receives job-related-training. What factors influence JRT and how does JRT affect the type of contract earned in employment.

Sentiments similar to those in the above paragraph are echoed in the Accelerated and Shared Growth Initiative for South Africa (AsgiSA). One of the South Africa's aspirations is to reduce unemployment which is now over 26 per cent, to below 15 per cent by the year 2014. The single greatest impediment faced by government is shortage of suitably skilled labour, which impediment has its origins traceable back to apartheid. It is here believed that in South Africa; a supply constrained economy, policies affecting the supply side (such as boosting the work related skills)

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[11] E.g. communication in English

[12] Now promoted into the impressive sounding; 'Universities of technology'. The old term *technikons* is however, here retained for easy of qualification distinction.

are likely to affect the macroeconomic variables such as improvement in productivity, output and employment in a more sustainable and robust manner than boosting demand. Black and Lynch (YEAR: 263) show that OJT raises productivity by about 16 percent[13]. It is thus imperative that some study be conducted on some aspects of training. In the available literature, there is no evidence of a direct study on; job-related-training and contract assignments in the private sector, and in the midst of plenty of information symmetries, in South Africa's labour market.

It is worth knowing who is receiving job-related-training, the basis of inclusion in such programmes, and the impact of such training on a worker's attainment of specific contracts (the earnings thereof, and the impact on inequality), all under the influence of the production costs boosting information asymmetries (such as the apartheid heterogeneous-quality education design, the HIV pandemic and the related policies, and South Africa's labour laws).

Investment in human capital is but affected by expected returns and the stochastic nature of those returns. Spence, (1974b) is of the view that an individual's decision to invest in schooling entails analysis of whether the benefits outweighing the costs. Therefore, if the benefits realisable in the future are equivocal until actually confirmed by time/life, for (persons undertaking postgraduate studies or) participation in job-related-training, human capital accumulation ceases to be viable for those in doubt. Checchi and Garcia-Penalosa (2004) illustrate that existence of uncertainty breeds rampant educational inequality and lowers average attainment.

Globalisation and changes in the economic and social, business environment dictate implementation of several survival firm policies. Among these are: pre- and post- employment screening for the more productive workers, restructuring of employment contracts, minimising of employee benefits, productivity and profitability related retrenchments, outsourcing jobs that require low skills and adaptation of more capital intensive production methods. The profit maximisation, antagonising information asymmetries and the labour market laws, compound the need to implement some of the measures listed in this paragraph.

[13] However this productivity is measured subjectively thus not being comparable across firms.

Employers are likely to design contracts and training exercises, in a manner that avoids slackness by workers, by unveiling the non-disclosed productivity augmenting traits. They might hire only temporarily or use training at work, to try and learn of workers' genuine productivities, or they might use a worker's acquired education and training as a signal of a worker type. The essence of screening lies in the fear of perpetually having to sustain low productivity workers, and the health associated risk of losing plenty of production-time, heavy labour turnover, the accompanying re-training costs. On the other hand, the desire to signal using participation in JRT offered at work partly lies in a more able worker's inability to pursue further studies, for instance due to a poor family background, or extended family responsibilities.

The intent in this study is thus to empirically establish whether screening based on acquisition of JRT takes place in the private sector in South Africa, where labour is highly heterogeneous and firms do not know the true quality of workers they may be hiring, and while labour laws are very restrictive. Details of the data and estimation methodology are offered next.

3 The data and methodology

3.1 The data

A single data source is utilised in this study. It is South Africa's 2004 Labour Force Survey (LFS), conducted by Statistics South Africa. The LFS is a bi-annual rotating panel household survey. It portrays the statistics of the dynamics of issues in South Africa's labour market. For instance, the survey offers a macro and micro view of the (un)employment situation in the country, the latter includes among other things, developments at work places. Information is sought about individual persons, workers, migrants and households.

The number of recorded individual respondents in the entire survey are 73 797. Of the four data files (person, household, workers and migrant) that constitute the LFS, the one utilised in this study is the workers file. The variables utilised are explained below.

The variables

The training referred to in this study is taken to be *job-related-training,* since the September 2004 Labour Force Survey (LFS) asks whether the interviewee 'has been trained in skills utilisable at

work'–such as bookkeeping and child minding-. What the survey does not however precisely address, is: distinctions among sources of training, specification of whether the training is specific or general, formal or informal, whether the training undertaken occurred with the current or previous employer, was completed or not, and whether workers participated in off-the job training or OJT. Equally, no mention is made either regarding the date when the training spells were conducted.

Utilising the little information covered by the training variable, a job-related-training dummy is generated (1 if on-the-job training is received, and zero otherwise) and put to use as the dependant variable in the training probit model, and an explanatory one in the contract equations. The variable addressing duration of the training (contained in the LFS) would have been most desirable but registered far less responses (and is also highly correlated with the skills training one). Therefore, the training dummy prevails.

The LFS data however addresses the issue of course completion. It requires the respondent to offer her highest level of education completed. The levels of schooling are not numbered according to years of schooling (and so no continuous schooling variable is included). Instead the numbering commences with no schooling, through primary and secondary education, with several manpower and college certificates and diplomas credentials interjected between high school and a university degree. Postgraduate qualifications appear thereafter, while provision is made for other qualifications that have to be specified by the respondent. The schooling dummy variables thus stretch between primary (1), and the masters and beyond (24)[14]. No schooling serves as the comparison group. These academic credentials dummies are used in the labour-participation, the training and contract equations. A dummy, distinguishing whether a worker is skilled; and thus works independently, is also generated for use in the contract-type model.

[14] (No schooling is 0, Primary & Secondary stretches between 1-13, there are 3 NTC levels thus numbers 14-16, Certificate with no Grade 12 is 17, Diploma with no Grade 12 is 18, Certificate with Grade 12 is 19, while Diploma with Grade 12 is 20. A Bachelor's is 21, and a Bachelor's plus is 22. An Honour's is number 23, Master's plus is 24, while other qualifications are numbered as 25). The 'other' qualification is eliminated from this study, since no details are offered in the version of the LFS accessed to the public.

Reduction in labour productivity is captured by the absenteeism variable[15]. A general absenteeism variable (i.e. one that ignores the actual reason for absenteeism) is computed as the negative difference between hours actually worked (including overtime), less the hours usually worked (including overtime). The absenteeism variable is actually a proxy for reduction in productivity, is assumed important since contract assignments -when employers are denied the right to sack workers- is about avoiding slackness. Absenteeism is likely to be the point of focus if fixed period contracts are observational contracts. The same variable is of significance during time of the HIV pandemic. A dummy capturing whether a worker is at liberty to adjust the number of hours she works, is also incorporated in the training function.

Tenure is computed in monthly terms. To the month equivalent of complete years a worker has served under her current employer, is added months in employment that do not sum-up to a complete year, inferred from a variable which registers the month when a worker resumed employment. The tenure variable partly captures seniority. A tenure squared variable is also included to account for the possible non linear relationship with training.

No experience variable is put to use in these estimations since it is tenure and not overall experience that mainly matter in a firm's training and (to some extent) contract assignments (Bauer and Haisken-Denew, 2001). Secondly, in the absence of data on actual experience, computation which assumes automatic assumption of employment on 'graduation' sounds unrealistic in an economy experiencing close to forty per cent unemployment.

A series of dummies with relevance in the labour participation, the training and contract types regressions, are also generated. These are: 1 if the worker is a member of a trade union and 0 otherwise. Work security is addressed using dummy variables generated for contract types; permanent, fixed employment period), temporary contract and jointly, the causal and seasonal contracts. A collective contract types dummy variable is used as the dependent variable in the multinomial logit equations for the contracts. Nine industry dummies are also generated (as per the standard industrial classifications (SIC)), with electricity serving as the comparison industry. (See

[15] The Bureau of Economic Research (BER), in South Africa uses absenteeism as a measure of reduction in labour productivity.

detailed of industrial classifications in the appendix). Industry dummies are used in the training functions.

Dummies of business size (20_49 regular workers and 50 or more regular workers), are generated to capture the fact that there is a relationship between training and the number of workers a firm employs (Holtmann, 1991). The 1-19 regular workers' category is used as the comparison group. The size of the firm; expressed as the number of regular workers (and thus its labour related responsibilities) is also a crucial factor towards determining whether an employer screens or not. The bigger the worker-force, the more likely is the firm to screen for labour productivity since it bears greater worker responsibility. This argument follows from the restrictive labour laws and the costly HIV/AIDS pandemic. A policy regime variable is also utilised, to capture the times (1 if 1994 and beyond, 0 before 1994) when screening is most likely to have been effected. The new labour policy and those intended to address the apartheid mishaps are considered to have set in after the 1994 democratic elections in South Africa.

AA appears in form of a dummy for the previously advantaged population group; 1 if white and zero for the other population groups. A gender variable is also generated; 1 if male, and zero if female. Gender is one of the commonly implemented basis for screening. An age and age squared variables are included in the labour participation equation, on grounds that screening may be age discriminative (Booth, 1991). The age dummies included in the training equation are age15-29 and age 60 plus. Workers with ages 30 to 59 are used as the comparison group. The 15-29 age group is employed as the comparison group in the contracts models. Age embraces variations in unemployment, the health risk, as well as chances of being offered training.

No question addresses the rural-urban[16] impact, on training, job availability, or contract assignment. The closest one gets is use of the nine provincial dummies. Western Cape is used as the comparison province. Difference in contracts attained due to varying worker occupations, is accommodated for, with the domestic worker group utilised as the comparison occupation. Description of the occupation variables included appears in the appendix.

[16] No question was included in the LFS regarding rural or urban work/er location because of absence of consensus of the definition of rural/urban,

The final list of variable afforded from the LFS, used in the labour participation, contract and training equations are listed in Table E-3 in the appendix, with a brief description and some measures of central tendency, also offered. The methodology utilised to establishing whether acquisition of job-related-training is employed as a screening device when assigning workers to contracts, is explained next.

3.2 The methodology

The methodology follows four steps. Firstly, an explanation of the descriptive statistics (see details in the appendix) regarding contract types and training is made. This is (partly) intended to give an overview of the data regarding: Who is receiving job-related-training? Who holds which contract? Etc. This is followed by ascertaining the relative financial implications of the permanent and fixed period contracts utilising: the early earnings ratios, output from wages equations, as well as the per contract wage-pension implications. This part is included to illustrate the aspect of contract ladders, the varying financial implications[17], and possibly introduce the need for varying extents of screening across contract types. Thirdly, a probit and a multinomial logit models are estimated to explain what determines participation in training and contract assignments, respectively, as well as to show what relationship exists between schooling credentials and a) job-related-training, and b) contract attainment. Finally, the (Oaxaca) residual difference method is employed to decompose the explained/productivity element from the unexplained/discriminative/screening one; the discriminative component constitute the advantage due to participation in training, and a disadvantage of not. Details of the residual difference method are given below.

Step one

A multinomial logit model for employment participation is run. Choice of the multinomial model is due to its ability to capture both the influence of worker characteristics on employment and the employer's recruitment policy. The dependent variable constitutes employees with different contract types. In the attempt to preserve the highest amount of information captured in the survey, the employed are represented according to the nature of contract type held: permanent, fixed

[17] Hinted on in the introduction to this study.

period, temporary, and the joint causal and seasonal one. The latter, joint category is utilised as the comparison group. Since this study is focused on screening while assigning contracts, no reason is seen to include the unemployed as a comparison group.

With the employment status represented by *e*(*e*=1,2,3,4), the probability that an individual *i* of on the job-related-training status yes or no; *j*(*j*=*y, n*) and a vector of characteristics Z_{ij}=(1, Z_{2ij}, Z_{3ij}, Z_{4ij}) will end up with contract type *k* is established as:

5-1 $$P_{kij} = \frac{\exp(a_{kj} Z_{ij})}{\sum_{e=1}^{M} \exp(a_{ej} Z_{ij})}$$ (*k*=1,2,3,4) and *j*(*j*=*y, n*)

such that α_{ej} is the vector of coefficients corresponding to the *e*th employment status, qualified by the job-related-training status *j.*

The average predicted probability of acquiring contract type *k*, for each job-related-training status *j* is got as

5-2 $$\overline{P_{kj}} = \frac{1}{N_j} \sum_i P_{kij}$$

Step two

Next, the job-related-training status differences in average acquisition of contract type *k*, is then decomposed as $(\overline{P}_{ky} - \overline{P}_{kn})$.

$\overline{P}^{*}_{kj}$, the proportion of workers of job-related-training status *j* who acquire contract type *k* in the absence of contract assignment discrimination, is then defined as:

5-3 $$\overline{P}^{*}_{kj} = \frac{1}{N_j} \sum_i P^{*}_{ikj} \text{ where } P^{*}_{ij} = \frac{\exp(a^{*}_{k} Z_j)}{\sum_{e=1}^{M} \exp(a^{*}_{e} Z_j)}$$

The participation structure derived using the pooled sample serves as the non-discriminative base.

The differential in the probability that those that receive training and those that do not, end up with contract type *k*, is decomposed as:

5-4 $$\overline{P}_{ky} - \overline{P}_{kn} = (\overline{P}^{*}_{ky} - \overline{P}^{*}_{kn}) + (\overline{P}_{ky} - \overline{P}^{*}_{kn}) + (\overline{P}^{*}_{ky} - \overline{P}_{kn})$$

The first item (in brackets) on the right hand side of Equation 5-4 represents productivity, while the last two capture discrimination/screening. The productivity term embraces the component explained by the different productivity characteristics of participants and non-participants in job-related-training. It is the productivity component observed in the non-screening/pooled private sector labour market. The screened component (in the second and third brackets on the right hand side), captures the differential not accounted for by the personal, observable characteristics. It is thus the residual part, attributable to screening. The first segment of screening component represents the contract-attainment-advantage that accrues to participating in job-related-training, while the last one manifests the disadvantage due to non-participation.

This discrimination/screening estimation is based on some important assumptions: Firstly, other forms of discrimination such as the quality of education are considered not taken on-board due to absence of data. Such omissions are cable of causing an over-estimation in the level of discrimination. Secondly, given that discrimination/screening is established as a residual, misspecifications of the contract-type equations, errors in the data, non-inclusion of relevant productive characteristics that are not observable/quantifiable may introduce bias in the estimation of discrimination. Finally, presence of screening is assumed to have only distributional effects, and nil influence on employment or wage levels.

3.3 The estimation technique

This study is specifically conducted for the employed; regarding estimating the training and contract-type equations. Estimations are thus vulnerable to the sample selection bias. However, it is assumed that the sample selection bias is relevant in case of the training function, where a

worker's ability self-selects her to participate in training or not to. And in many incidences where the latter option applies, a worker may remain out of employment. The labour participation and training models are thus run to fully embrace this self-selection aspect. In case of the contract type model and the focus on screening, it is assumed that the unemployed do no influence contract assignments. They make no choice of which contract type to join, nor do employers take them aboard in the decision of contract assignments.

To account for this likely sample selection bias in the training scenario, the Heckman, two-stage' estimation procedure is adopted. At the (first) *selection model* stage, a labour participation probit model –that includes i) the employed, and ii) the in-active and the unemployed- is run. An inverse Mill's ratio (IMR) is generated immediately thereafter. It accounts for the probability of belonging to the employment pool and not the unemployment on in-active one. The IMR is incorporated into the successive run (second stage) training probit model. Robust estimations are conducted for the labour participation, and training models.

4. The results

This section begins with a general description of the statistics regarding contract types and training, within South Africa's private sector. The unemployed and unable category is however included in the explanations to the contract types. Aspects covered in the description are, policy regime shift, race, population group, schooling, the youth and gender. These factors are likely to have an impact on training and contract assignment screening. The credentials distribution pattern regarding contracts and training are described first. Section 5-2 discusses the relative financial implications associated with the permanent and the fixed period contract type, as a way to illustrate the contract ladders, and possible need for varying extents of screening across contract types. The determinants of participation in job-related-training and contract attainment are analysed in section 5-3. While the training advantage is decomposed from the non-participation disadvantage, towards attainment of a specific contract type, in section 5-4.

The extent of descriptive analysis regarding training, done below (and other forms of analysis done later in this study), is greatly influenced by the available data; and the observations per variable.

However, note that the data used in this study is as is provided by Stassa, with nil massage effected by the researcher. This way some random element is captured in the results. The observations are few here and there, such that the results have to be viewed with some caution. This flaw in data is exogenous to the researcher. There is but a problem worth investigating, and sufficient observation can only be ensured in a fresh and specific survey, unlikely in the near future.

5.1 Descriptive statistics

Table 5-1 below, shows that about two thirds of holders of credential such as certificates and diplomas with grade twelve, bachelors, honours and master's and beyond, credentials have permanent contracts. However, it is alarming to see that 22.34, 18.9, and 28.87 per cent of workers with bachelor's, an honours and a master's plus credentials respectively, are unemployed. This may be due to the quality of the institution offering education and training. The unemployed category is dominated by persons at the lower end of the credentials ladder. Representation within the fixed period contract type is low -ranging between 1.3 and 3.42 per cent- across the schooling category. However, the numbers with fixed period contracts have more than doubled (from 0.8 to 2.21 per cent) for periods; before and after 1994. The relative percentages of workers absorbed in the very insecure contract types (temporary, causal and seasonal) are low, catering mostly for persons with minimal education.

Table 5-1. Distribution of schooling credentials among contract type (no. and %)

	Schooling								
CONTR_TYP	None	Prim&Sec	NTCs	c/dipn12	c/dipwz12	Bacheror's+	Honours	master's+	Total
Unemployed[18]	1,709*	20,216	127	106	596	170	31	28	22,9
	53.54**	58.11	43.49	42.74	27.4	22.34	18.9	28.87	55.
Permanent	1,010	10,225	138	124	1,383	556	126	65	13,6
	31.64	29.39	47.26	50	63.59	73.06	76.83	67.01	32.
Fixed period	42	719	10	7	63	14	4	2	8
	1.32	2.07	3.42	2.82	2.9	1.84	2.44	2.06	2.
Temporary	266	2,211	12	7	105	18	2	2	2,6

[18] The number of unemployed exceeds the employed. This is because respondents who were depicted as being in employment but who recorded zero income, were dropped from the analysis in this thesis, since the analysis included estimating some wage equations. Consultations with Statssa revealed that employment is defined lightly to include even persons who earn in-kind, but that the in-kind earnings are not put in monetary terms.

	8.33	6.36	4.11	2.82	4.83	2.37	1.22	2.06	6.
C & Seasonal	165	1,418	5	4	28	3	1	0	1,6
	5.17	4.08	1.71	1.61	1.29	0.39	0.61	0	3.
Total	3,192	34,789	292	248	2,175	761	164	97	41,7
	100	100	100	100	100	100	100	100	1

**The actual numbers*

***The percentages*

Regarding participation in job-related-training (Table 5-3 below), workers' with master's and beyond qualifications, as well as those with the crafts trade certificates (NTCs) participate more (with above thirty per cent for each of these categories). The is a noticeable descending order in the percentage of participation from the master's plus credentials down to the bachelor's[19]. Mincer, (1974: 71) similarly observes that OJT is offered mostly to workers with higher education levels. All other credential levels except for the master's plus and the NTCs, have about seventh per cent non-participation.

Table 5-2 Participation in job-related-training by holders of different schooling credentials

Training / Schooling	None	Prim&sec	NTCs	C/dipn12	C/dipw12	Bacher's+	Honours	Master's+	Total
No_OJT	3,145*	31,645	201	179	1,705	600	127	65	37,667
	98.53**	90.96	68.84	72.18	78.39	78.84	77.44	67.01	90.29
OJT	47	3,144	91	69	470	161	37	32	4,051
	1.47	9.04	31.16	27.82	21.61	21.16	22.56	32.99	9.71
Total	3,192	34,789	292	248	2,175	761	164	97	41,718
	100	100	100	100	100	100	100	100	100

**The actual numbers*

***The percentages*

The share of workers in the fixed period contract type, in the temporary, causal and seasonal contracts, after 1994, has more than double that before 1994. There more insecure contract types are thus being entered into more in the period after 1994.

[19] Credentials such as certificated and diplomas with or without grade 12, are not in one alignment with the degree steam, hence the hardship in comparison.

One outstanding revelation is that of all workers that received JRT, 42.58 per cent are unemployed. Although inconclusive, this result may support the hypothesis that training is also utilised for its screening quality, over tertiary education institutions with similar certificates but varying qualities. Alternatively, with the skills development act allowing for discarding of workers who do not attain the required productivity levels after being trained, the unemployed but trained may provide the sought evidence[20]. The same need to screen may account for the relative higher number of participants in training for holders of fixed period contracts, as compared to those in the other less secure contract types.

The combined representation in the unemployed and the permanent contract categories, is about ninth per cent, whether the workers form part of the white employee population, or the non whites one. However, while about 62 per cent of white workers have permanent contracts in South Africa's private sector, close to 60 per cent of non-whites are unemployed. No other contract type singly hosts more than two per cent of the whites working community.

45.8 and 41.77 per cent of the youth (15-29 years) are unemployed or employed with permanent contracts respectively. *Of the workers with more than 29 years, 70 per cent are unemployed*. For the two age groupings; the youth and those older, the representation in the fixed period contract is smallest. About 6 per cent of workers have temporary contracts for the youth and those above, while the percentage representation is about 4 per cent in case of the causal/seasonal contracts, for both age groupings.

There are far more (less) women (men) who are unemployed (61.3, 38.6 respectively). The bias against women persists in the permanent contract, with male participation at 38.07 per cent while that of women is 27.48 per cent. The temporary contract type has more of both men and women, than the casual/seasonal contract type. The fixed period contract has the least participation whatever the gender considered.

[20] Remember that the survey does not disclose whether those that received JRT actually completed the courses.

When the analysis is based on JRT as the central focus (see table E-2 in the Appendix), 12.37 per cent of the population employed before 1994 are revealed to have participated in job-related-training. For workers employed as from 1994, only 9.39 per cent did. This result contradicts government's endeavours to increase skills development. One would have expected an increasing trend in the numbers of workers participating in skills-boosting, job-related-training. Across the different contract type, more than 80 per cent of each contract type is shown not to have participated in JRT. This finding is in line with the requirements for screening to succeed. Riley (2001:441) quotes the necessary and sufficient condition for an equilibrium (specified by Rothschild and Stiglitz) as being that, the proportion of the more able and thus more productive workers (in this case the ones assumed to be receiving JRT, to the entire labour force, has to be small. Participation in training is greater in the fixed period contract type (with 18.12 per cent) followed by the permanent contract type (with 13.28 per cent). There is less than 10 per cent participation in job-related training for workers in each of the other (more insecure) contract types.

Youth participation (11.05) exceeds that of older workers (7.54). This record is at per with a prior expectation. The youth are more motivated to invest in training than the elderly, since the youth have more years over which to receive income from their investment (Mincer, 1974: 54). For the above reason, training tends to decline with age. Male participation (11.56) is shown to exceed that of the female counter parts (7.93). There is thus the need to address this gender inequality. However, this finding is not restricted to South Africa alone. There is an equal observed tendency to allow less women, (and if allowed it is for shorter periods), to participate in OJT, than men. Or, women that are offered specific training are made to bear a larger part of training costs (*Ibidem*). This practice arises because of the smaller expected returns from OJT, since a considerable portion of women's working life is used to attend to children

Participation in job-related-training by workers belonging to the whites' population group (22.49) exceeds that of other races jointly (8.79), by more than double. Thus transition does not seem to be taking root. The status quo for the previously advantaged continues to be, regarding attainment of job-related training. This outcome may however be a counter response to the treatment emitted to white workers in the public sector. Discrimination in training is also on record, to occur based on racial divide, elsewhere. Mincer (1974: 68) shows that the Negroes receive less OJT than whites.

Negroes thus tend to experience smaller wage differential, with respect to age or education. Schooling opportunities also seem more available for the Negroes than are OJT opportunities. The financial implications per contract type are analysed next.

5.4.2 Comparison of early earnings ratios, as well as other forms of establishing contract-type financial implications

Employers would wish to employ from all employee categories in a manner that minimises costs accruing to the diversities of information asymmetry and risks. Malcomson *et al.* (2003) show that use of UP-or-OUT contracts and OJT, amid information asymmetry, enables firms to enjoy better profits. In support of this cost minimising goal, permanent contracts are here revealed to be more financially involving for employer. The result from estimation of a wage equation for the private sector reveals that remunerations to workers with permanent contracts exceed those of workers with other contract types, by about 25 per cent[21]. There is also additional evidence of cost minimisation through diversified contracts in the private sector, in the form of positive correlation (0.4530 between permanent contracts and pensions, but a small and negative one (-0.0967) with the fixed period contract).

The average wage of early career workers (15-25 years of age) participating in training, and have signed fixed period contracts, is also compared with that of permanent contract holders, but who also participate in training. Using private sector data, it is revealed that early career workers' average wage ratio for permanent/fixed period contract is 1,346. Thus fixed period contracts are paid less than their permanent contract holder counter parts. The next section analyses the influential factors towards attainment of job-related-training, or a contract type, based on a probit and multinomial logit models.

4.3 The determinants of participation in training, and earning a specified contract type

The quality of the labour participation, training and contract type models (see Table 5-3, and 5-4 below, plus lots of others in the appendix) is depicted by several statistics. The labour participation model is shown to pass the Skewness/Kurtosis tests for Normality, details of which appear in the appendix. Thus use of the IMR (with its non-linear quality) as the identifying variable in the second

[21] These results are available on request.

stage training regressions, is thus justified. All estimations utilise heteroskedasticity-robust standard errors hence there is no need to worry about heteroskedasticity. Serial correlation is not a likely problem when cross-section data is at use. The Stata modeller also automatically drops variables that exhibit serious multicollinearity; for instance membership to a labour union and that of the policy regime switch in 1994, in the training regression. The two variables happen to be severely correlated with the IMR. And since the IMR addresses a relationship between the employed and unemployed, the high correlation may accrue to the policy changes which in turn influence levels of (un)employment. The unions also have an impact on the eventual state of (un)employment. An IIA test is conducted and does confirm independence of the different contract types identified in the study. A test for no omitted variables is generally significant for all sectors, and this is a flaw in the results. The Pseudo R-squared; -a measure of goodness of fit- got from running the contract type equations, are also small (about 15 per cent).

The results from the training probit model in the Table 5-3 below, reveal that use of a sub-sample of only the employed, has no significant eventual influence on participation in job-related-training. This result is expected since a big percentage of the unemployed are shown (under the descriptive statistics) to actually have received training. The offer of training is open to all; employed and unemployed. However, the retention depends to an individual's actual productivity, and possibly the institution where the training was offered. All education variables are revealed to have a positive and significantly greater impact towards participation in training, than workers with no schooling. (Few [3/11] (fewer 2/11) qualifications were significant for men (women) in Booth's (1991:286) study of Britain).

Table 5-3 Determinants of job-related-training participation in the private sector (extract)

Probit regression — Number of obs = 14822
Wald chi2(38) = 978.61
Prob > chi2 = 0.0000
Log pseudolikelihood = -4802.5661 — Pseudo R2 = 0.0981

ojt	Coef.	Robust Std. Err.	z
mills	0.049258	0.111891	0.44
Education			
primary&sec	0.785026	0.092963	8.44
ntcs	1.482449	0.153162	9.68
C/dip no Gr12	1.218581	0.177584	6.86

C/dip wz Gr12	1.062652	0.109549	9.7
Bachelor's,+	0.817899	0.131432	6.22
honour's	0.959187	0.197577	4.85
master's, plus	1.175395	0.219692	5.35
AOB			
absenteeism	-0.00885	0.003254	-2.72
age15_29	-0.14164	0.053341	-2.66
age60pls	-0.0807	0.081621	-0.99
tenure	-0.00474	0.001539	-3.08
ten_sqrd	0.000027	1.33E-05	2.03
males	0.179995	0.036964	4.87
whites	0.269672	0.064127	4.21
perm_contr	0.04988	0.049298	1.01
fixp_contr	0.216745	0.070379	3.08
temp_contr	0.008275	0.054725	0.15
20_49workers	0.029199	0.044848	0.65
>=50workers	0.0656	0.043917	1.49
adj_hri	0.089421	0.047509	1.88
_cons	-2.43149	0.127737	-19.04
Obs	*14822*		

Belonging to the previously advantaged (whites) contributes significantly more (2.69 per cent) towards participation in training[22] than other population groups. Men's participation exceeds that of the female counter-parts by 17.9 per cent. Racial and Gender imparity is thus still rampant. This outcome is however not unique to South Africa. Lynch, (1992:311) records race and gender as characteristics that appear to influence the chance of participation in OJT. She shows that women and non whites are less likely to be trained by a firm. Women are also at a disadvantage according to Holtmann and Idson, (1991:346).

Tenure has a significant and tiny (less than 1 per cent), negative influence on participation in training. Lynch's (1992:304) results for 1983 estimations are very close. The negative sign qualifying the tenure variable is at par with a prior expectation. A negative relationship is expected between the possibility of attaining training and a worker's –accumulation of years in a firm's service. It is mostly the youth (new employees), with more years over which to enjoy the benefits of training, that are expected to strive more towards participation in job-related-training. Tenure squared is also however insignificant.

[22] Salop and Salop (1976;619-20) [in addition to education qualifications] identify race and gender as other screening devices.

Unexpectedly, the youth (aged 15 to 29 years) are revealed to be less likely (by 14.16 per cent) to participate in JRT, as compared to persons around middle age (30 to 59 years). This result is contrary to what is established from other tests on the same issue, in this study. A high participation is registered by Lynch (1992:311). This youth age groups embrace variations in unemployment, the (pandemic) risk element in an employee, as well as varying chances of being offered job-related-training as a worker gets older. Although inconclusive, the surprising result by the youth in this study may have something to do with the risk element in young worker amid the HIV pandemic. The result seem to support the notion that training is a means for self-selection. The youth age group happens to be the one most hit by HIV/AIDS (Fox et al., 2003). Workers with 60 years or more have no significantly different influence on participation in job-related-training as compared to workers of middle age, as is expected.

Workers with fixed period contracts return a significantly greater chance of participating in training, (in agreement with the self-selection hypothesis) as compared to workers with causal and seasonal contracts. Permanent and temporary contract holders register an insignificant result.

Firms that employ more than fifty workers provide more training than the small and micro enterprises (SMEs). It is anticipated that the bigger the worker-force, the more likely is the firm to screen for labour productivity given the restrictive labour laws and the heavy recruitment and retraining indirect costs, related with among other thing to the HIV/AIDS pandemic and the restrictive policies. Bigger firms also have more resources, and so spare some for training. Holtmann and Idson, (1991:346) also record that firm size matters in provision of training. Booth's (1991:286) results on firm size are not significant. All industries are significant and better at offering training than electricity one, except for agriculture. In case of Britain, Booth (1991:286) registered agriculture as the only significant industry. Analysis of the determinants for acquisition of a particular contract type is done next.

From the multinomial logit model for contract types (shown in Table 5-4 below), possession of a master's or beyond qualifications has a positive and significantly greater impact towards attainment of permanent and fixed period contracts than persons with no schooling. The only other positive

and significantly greater impact with regards to attainment of a fixed period contract is for holders of NTC certificates, (as compared to workers with no schooling). Being white (previously advantaged) has a significant and positive (88 per cent) greater impact towards obtaining a permanent contract in the private sector, as compared to the previously disadvantaged population groups. Being a male has a positive and significant advantage over being a female, across contract types. Workers around middle age have a significantly better chance of joining the permanent contract as compared to the youth (15-29) years. Being a member of a labour union positively (negatively) assists towards attainment of a permanent (temporary) contract. Implementation of the new policies (e.g. the labour one) has had a significant[23] and huge (165 per cent) negation of attainment of permanent contract.

Table 5-4 Influences of contract attainments in the private sector (abstract)

	Perm_contr	Robust		Fixp_contr	Robust		Temp_contr	Robust	
contr_typ	Coef.	Std. Err.	z	Coef.	Std. Err.	z	Coef.	Std. Err.	z
Education									
primary&sec	-0.09751	0.101832	-0.96	0.328392	0.199902	1.64	-0.10907	0.118214	-0.92
NTCs	0.250502	0.47298	0.53	1.180611	0.580613	2.03	-0.00469	0.561143	-0.01
C/Dip no Gr12	-0.23752	0.558198	-0.43	0.000243	0.883156	0	-0.47307	0.660108	-0.72
C/Dip wz Gr12	-0.1011	0.251307	-0.4	0.341944	0.373651	0.92	-0.28744	0.306653	-0.94
Bachelor's+	0.09525	0.629061	0.15	-0.29377	0.8933	-0.33	-0.38682	0.759164	-0.51
Honour's	-1.03647	1.027846	-1.01	-0.02679	1.368071	-0.02	-32.1919	1.095344	-29.39
Master's+	20.26208	1.198592	16.9	-11.5329	1.175147	-9.81	21.47937	.	.
AOB									
absenteeism	-0.01248	0.008537	-1.46	-0.00465	0.014548	-0.32	-0.00801	0.010123	-0.79
Whites	0.886907	0.17066	5.2	0.131184	0.248417	0.53	-0.18535	0.226324	-0.82
Males	0.375828	0.070993	5.29	0.529009	0.115377	4.59	0.264184	0.083758	3.15
age30_45	0.375952	0.067811	5.54	-0.12693	0.106972	-1.19	-0.07073	0.078082	-0.91
age46_59	0.294167	0.090408	3.25	-0.1777	0.151592	-1.17	-0.13075	0.105542	-1.24
age60pls	-0.16174	0.176093	-0.92	-0.75486	0.367489	-2.05	-0.83647	0.229178	-3.65
L_union	1.451967	0.120993	12	0.177069	0.18596	0.95	-0.75882	0.175478	-4.32
work_indp	-0.46122	0.107407	-4.29	-0.58349	0.210408	-2.77	-0.11248	0.121984	-0.92
Policy									
policy_reg	-1.65241	0.127607	-12.95	-0.09491	0.229689	-0.41	-0.07908	0.160107	-0.49
_cons	2.616321	0.191186	13.68	-2.35661	0.366322	-6.43	0.158399	0.231441	0.68

Having established the determinants for participation in training, as well as those that promote attainment of a specified contract type, the next task is to decompose the advantage of

[23] But an insignificant one towards attainment of other contract types.

participation in training towards attainment of a given contract type, from the disadvantage of not participating.

4.4 Establishing training screening in contract assignments

Table 5-5 below shows the results of the decomposition of the training participation differential towards contract attainment. The pooled private sector serves as the basis of comparison. A logit model for employment in the private sector is run, the results of which are then proportionately allotted to training participants and non-participants. At the disaggregated level, multinomial logit models for contract types are run; one for training participants, and the other for non-participants. Decomposition of the training gap is then per contract type: the permanent contract type, fixed period contract and finally for the temporary contract.

The Oaxaca (1973) methodology decomposes the observed gap into two components: First is the portion attributed to observed characteristics such as the skills level due to all forms of human capital accumulation and past experience; i.e. the productivity portion. The second portion is attributable to private sector screening, specifically emphasising connotations implied by the act of furthering accumulation of human capital: for instance self selecting one's self into participating in training or not; the co-called discrimination aspect. Amid a tighter South African labour market with a strong trade union movement, rising wages and heavy unemployment, it is assumed in this study that workers' who show the desire to accumulate more human capital (and at a time when skills shortage is rampant), and who specifically attain JRT, are the more sought after and thus favoured category. The contract assignment structure of workers that participate in training is thus used as the basis for comparison.

Table 5-5 Decomposition of the training differential in contract assignments in the private sector

	Priv_sec	Perm_contr	Fixp_contr	Temp_contr
Observed probability				
Training	0.2016992	0.7524659	0.0473107	0.126332
No_Training	0.6167989	0.6794874	0.0449152	0.166853
Predicted probability				
Training	0.6107588	0.7332457	0.0722733	0.130092

No_Training	0.622184	0.6817686	0.0419526	0.1664067
Observed differential	-0.4150997	0.0729785	0.0023955	-0.040521
Explained	-0.0114252	0.0514771	0.0303207	-0.0363147
(productivity %)	2.752399002	70.53735	1265.73575	89.6194566
Unexplained	-0.4036745	0.0215014	-0.0279252	-0.0042063
(Screening %)	97.247601	29.46265	-1165.7358	10.3805434
Training advantage	-0.7959238	-0.0084743	-0.0861711	0.0279021
%	191.742803	-11.6120501	-3597.2073	-68.8583697
No_Training disadv	0.3922493	0.0299757	0.0582459	-0.0321084
%	-94.495202	41.0747001	2431.47151	79.2389132

The results (in Table 5-5 above) show that the observed difference in attainment of employment in the private sector between persons that participated in training and those that did not, is -0.41. This negative result signifies that on the average persons who did not participate in training were actually absorbed into employment, more than training participants. In absolute numbers, workers that acquire job-related-training make up only 9.71 per cent of the total private sector employees (as shown in Table 5-2 under the descriptive statistics). Secondly, not all that participate in training are eventually employed.

Of the training - non-training recruitment gap, part is explained in terms of observed characteristics. It is alarming that only 2.75 per cent of the recruitments in South Africa's private sector are based on observed characteristics. This might not be out of scope for a country with past racially inclined values. This outcome suggests that there is rampant screening in (the pooled) South Africa's private sector. Part of this screening carried out in the private sector is explained by the advantage participants in job-related-training have (191.7 per cent) over non-participants.

On the supply side, this screening result may be attributed to an individual worker's decision to invest in schooling entailing analysis of whether the benefits outweighing the costs (Spence, 1974b). If the benefits realisable in the future are equivocal until actually confirmed by time/life, the option to invest in human capital accumulation (participation in job-related-training such as OJT) ceases to be viable for persons in doubt. On the demand side presence of screening is explains by the belief that better-skilled/high ability workers are not a random sample of workers (Weiss' 1995). They are generally healthier. They pursue higher levels of education because they are optimistic of the education rewards in the future. Their depth of perception and speed there-of,

exceeds that of average ability students. They exhibit minimal propensity to quit studies or work, or to be absent at either. Their participation in JRT is some self-selection instinct. They are thus the more sought after, labour category.

Further disagregation of estimates to the contract level reveals that there is a 0.07 and 0.002 (-0.04) observed preference for participants (non participants) in training, in the permanent, fixed period (and temporary) contracts respective. Therefore, the more secure (and thus worker preferred) contract types are given to workers that acquire JRT. It is assumed in this study that less secure contract types such as the temporary one recruit and remunerate workers for their physical effort more than for the mental (training) related effort. It is the mental effort requiring duties –which are harder to objectively quantify- that require screening.

At the disaggregated contract level however, screening accounts for only about 30 (10) per cent towards attainment of the permanent (temporary) contract type. But JRT participants have a less mean absorption rate into the permanent and temporary contracts as compared to non participants. This outcome may be attributable to the many JRT participants who end up unemployed possibly because of insufficient productivity levels, as is permitted by the skills development act. Under the descriptive statistics 42.58 per cent of the workers that received OJT are actually unemployed.

The observational; fixed period contract appears to actually have no screening favours associated with participation in JRT. This finding is expected. There is no need to screen when employers actually observe a worker's true productivity, for workers on a fixed period contract. The training associated with fixed period contracts is a direct way of screening. The skills development policy also affords firms the right to terminate employment of workers who fail to reach the desired productivity level, during training. Firms are therefore not perpetually tied up with slack workers. Thus the result that fixed period contract depends entirely on a worker's observable qualities. The implications of the above results and the conclusion to the study are offered next.

5. Concluding remarks and implications

This study provides some insight into the extent to which screening based on participation in JRT occurs in South Africa's private sector, and the extent to which this JRT screening influences contract attainment, as well as a general description of the JRT and contract types state of affairs in the private sector, and ascertainment of the determinants, of JRT and contract attainment/assignment.

JRT based screening is shown to be rampantly used in worker-recruitment exercises in the private sector. Since this result accrues to the estimations for the pooled (private sector) sample, it represents the norm. Therefore, screening is the norm in the process of recruiting workers in South Africa's private sector. Confirmation of screening signifies that the recruitment procedure in South Africa's private sector is fundamentally subjective. This subjectivity to some extent accounts for not absorbing some workers who happen not to undergo the JRT *test,* but absorbing those that do. Screening is in brief promotes employment for some worker types, at the expense of others.

The result of the decomposition of the JRT gap in the assignment of contracts is revealed to be heterogeneous. The extent of screening is however lower at this disaggregated contract type level. This reduced extent of screening may arise because a bigger fraction of workers is already sieved off and left unemployed. The assumption in this study has been that amid information asymmetries, employers in the private sector take precaution before signing workers into the more involving permanent contracts. The results show that inter-contract type screening is higher [lower] in case of the permanent [temporary] contract type (about 30 per cent)[slightly more than 10 per cent]. This greater occurrence of discrimination in the permanent contract category has a lot to do with the policies effected as from 1994. Based on the results from the multinomial logit model for contract types, the policy dummy is shown to fundamentally negate acquisition of the permanent contract type. However, the 30 per cent screening with regards to the permanent contract-type means that to a greater extent acquisition of a permanent contract is based on a worker's observable qualities.

There is no evidence of screening in connection with the fixed period contract type. One may argue that there is no need to screen when it comes to the fixed period contract, since this contract type entails no risk of being perpetually tied up with slack workers. An employer's right to hire or fire is a discipline mechanism, and part and parcel of the incentive system, which mechanism employers still possess in case of fixed period contracts. The right to fire is clearly engraved in South Africa's Skills Development Act, for workers who do not attain the productivity grade, after being trained. The hiring and firing employee power serves to maintain the incentive system. To counter the possibility of poaching, retained workers have to be promoted to the more secure contract type and paid *competitively,* otherwise high labour mobility results.

Preference for workers who participate in JRT towards (firstly, employment in the private sector, and secondly towards) attainment of the more secure permanent contract, implies an increase in inequality between JRT participants and non-participants, or between the participants and the unemployed. This conclusion is based on the competitive remunerations that have to be offered to high productivity workers, to keep off poachers. This argument is supported by an earlier ascertainment (in this paper) that the permanent contract type is more financially rewarding/involving to workers/employers. It also includes pension contributions.

Much as one may however argue that the requirement for workers with better training-yielded-skills is in pursuit of improved productivity, amid plenty of information asymmetries, on the other hand preference for participants in JRT and the associated inequality is unfair in that it is based on non-economic characteristics. OJT participation is not entirely utilised for its skills bestowing role, but as a screening device. This practise may be attributed to information asymmetries such as the apartheid initiated differences in education quality, the HIV pandemic, and the asymmetry ascertaining labour (e.g. AA, dominantly practised in the public sector) and HIV/AIDS policies.

Screening may beget a vicious cycle of inequality. A worker's not being offered a secure contract involves a penalty in that successive potential employers may rely on the initial employer's act to avoid risky workers, thus sustaining denial of a worker of a secure contract. The trust in a worker embedded in the act of being offered permanent contract may on the other hand facilitate greater inter-firm job mobility. Competition for workers with previous secure contracts may manifest in

wage increases (as in Waldman 1990) and widens income inequality between holders of the secure and insecure, contract types, or with the unemployed. Workers incapable of signalling their desirable qualities through say: participation in JRT, face more unemployment in general, or frictional (between-jobs) unemployment, since they may continuously be offered temporary, seasonal or causal contracts. Bhorat and Lundall, (2004:1030) similarly disclose significant and rapidly increasing trends towards part-time employment, between 1994 and 1998.

When screening is utilised towards better assignment of workers to jobs (analogously to contracts in this case), the social returns that accrue from human capital accumulation may exceed private ones (Stiglitz, 1975b). Such may occur when workers assigned to temporary (permanent) contracts are for some reason pessimistic (optimistic) of the future that their utility is maximised, with current earnings and spending, not forced saving such as pension (through providing for a better future while in retirement). Such appropriate contract assignments yield higher average productivities and thus higher wages for respective contract holders. The outcome is however undesirable if the screening-yielded contract assignments sustain apartheid racial imbalances. From the multinomial logit estimations, being white has advantage only towards attainment of permanent contracts. According to Guasch and Weiss (1981), the OJT self-selection strategy has a flaw in that it can not exclude wealthy but less able workers, if they constitute (as the whites do in South Africa) a small fraction of the worker force.

Regarding participation in JRT, the overall results show that across contract types, less that 20 per cent of persons employed in each contract type acquire JRT. The fixed period contract type has the most participation (18.12%) followed by the permanent contract (13.28%). Other contract types have less than 10% participation. Youth participation exceeds that of workers older than 29. As for the credentials, acquisition of JRT increases as from holders of a bachelor's, right up to the master's plus. Evidence of preference of whites in the acquisition of JRT, is likely to perpetuate the apartheid initiated inequality[24]. There is evidence of bias towards men participation, over women.

[24] It is here assumed that success in JRT manifests in higher wages and worker vertical mobility opportunities.

The salient outcome of this study is that screening based on participation in OJT is rampantly practised in South Africa's private sector. The degree of screening is however shown to be less when the analysis is conducted at the disaggregated; contract-type level. The more secure permanent contract involves a greater degree of screening than the less secure temporary contract type. There is no evidence of screening in theobservational, fixed period contract type.

Please note that the results in this paper are base on one single (September) LFS. It would be desirable to use panel data when Stassa finally manages to combine the different surveys into one. The extent of analysis has also been restricted by the variables capture in the survey. Among others, the following variables are missed: employment experience, on-the-job and of-the-job training. There is also the data constraint. The observations are few in a number of incidences, such that the results have to be viewed with some caution. This data flaw is however exogenous to the researcher. There is but a problem worth investigating, and yet data with sufficient observation is unlikely in the foreseeable future.

6 Selected references

Altonji, J. G. & Pierret, C. R. 1996. Employer learning and the signalling value of education. *NBER Working Paper No. 5438*

Barker, F. S. 1999a. On South African labour policies. *South African Journal of Economics,* March 67(1):1-33.

_____ 1999b. *The South African Labour Market: Critical Issues for Renaissance.* 3rd ed. Hatfield, Pretoria: van Schaik.

_____ 2003. *The South African labour market.* 4th ed, Hatfield, Pretoria: van Schaik.

Bauer, T. K. & Haisken-Denew, J. P. 2001. Employer learning and the return to schooling. *Labour Economics,* 8:161-180.

Bhorat, H. 2004. Labour market challenges in the post-apartheid South Africa. *South African Journal of Economics,* Vol. 72(5):940-977.

Bhorat, H. & Lundall, P. 2004. Employment, wages and skills development: Firm-specific effects –evidence from a firm survey in South Africa. *South African Journal of Economics,* Vol. 72(5):1022-1055.

Black and Lynch

Booth, A. L. 1991. Job-related formal training; who receives it and what is its worth. *Oxford Bulletin of Economic and Statistics,* 53(3):281-294.

Boseley, S. 2002. Aids cuts life expectancy to 27. *Guardian unlimited,* 8 July 2002, 3 PAGES

Boyle, B. 2005. State calls for help from skilled whites. *Sunday Times,* 27 November:1.

Checchi, D. & Garcia-Penalosa, C. 2004. Risk and the distribution of human capital. *Economic Letters,* 82:53-61.

Elias, P. 1994. Job-related training, trade union membership, and labour mobility: a longitudinal study. *Oxford Economic Papers,* oct, 46(4):563-578.

Fey, C. 1981. Training internships: a bargain for everyone. *Training,* Apr, 18(4):35-37.

Fox, M., Simon, J., Rosen, S., Bii, M., Mac Leod, W., Foglia, G. & Wasuuna, M. 2003. The impact of hiv/aids on labour productivity in rift valley province, Kenya. January. Unpublished.

Guasch, J. L. & Weiss, A. 1981. Self-selection in the labor market. *American Economic review,* Vol. 71(3):275-284.

Harris and Raviv, 1978

Heckman, J. J. 1979. Sample selection bias as a specification error. *Econometrica,* Jan,47(1):153-160.

Hofmeyr, J. F. 2001. Segmentation in the South African Labour Market in 2001. DPRU/FEE Conference on labour Markets and Poverty in South Africa. Mistry Hills Johannesburg.

Holtmann, A. G. & Idson, T. L. 1991. Employer size and on-the-job training decisions. *Southern Economic Journal,* Oct, 58(2):339-355.

Johanovic, B. 1982. Favourable selection with asymmetric information. *Quarterly Journal of Economics,* 102:535-539.

Kahn, C. & Huberman, G. 1988. Two-sided uncertainty and up-or-out contracts. *Journal of Labour Economics,* 6(4):423-444.

Kitahata, M.M., Koesell, T.D., Deyo, R. A., Maxwell, C. L., Doge, W. T. & Wagner, E. H. 1996. Physicians' experience with AIDS as a factor in patients' survival. *New England Journal of Medicine,* 334(11):701-706.

Lynch, L. M. 1992. Private-sector training and the earnings of young workers. *The American Economic Review,* March82(1): 299-312.

Malcomson, J. M., Maw, J. W., and McCormick, B. 2003. General training by firms, apprentice contracts, and public policy. *European Economic Review,* April, Vol. 47(2):197-227.

Mincer, J. 1962. On-the-job training: costs, returns and some implications. *PDG.* : 50-79.

_____ 1974. *Schooling, experience, and earnings.* National Bureau of Economic research, New York

Paton, C. 2006. Doomed by degrees. *Financial Mail,* July, 7th :24-25.

Psacharopoulos, G. 1979. On the weak versus the strong version of the screening hypothesis. *Economic letters,* 4:181-185.

Riley, 1979. Testing the education screening hypothesis. *Journal of Political Economy,* 87(5):s227-s252.

Salop, J. & Salop. S. 1976. Self-selection and turnover in labor market. *Quarterly Journal of Economics,* Vol. 90(Nov):619-627.

South African Government Information. 2006 Accelerated and Shared Growth Initiative For South Africa, file://C:\DOCUME~1\user\LOCAL~1\Temp\4K36K8TW.htm

Spence, A. M. 1974b. *Market signalling: information transfer in hiring and related screening process*. Cambridge, Massachusetts: Harvard University Press.

Stiglitz, J. E. 1975a. Incentives, risk and information: notes towards a theory of hierarchy. *The Bell Journal of Economics, Proc.,* 6(Autumn):552-579.

Stiglitz, J. 1975b. The theory of screening education and the distribution of income. *American Economic Review,* 65(June):283-300.

Waldman, M. 1990. Up-or-out contracts: A signaling perspective. *Journal of labour Economics,* 8(2):230-250.

Weiss, A. 1995. Human capital verses signalling explanation of wages. *Journal of Economic perspective,* Vol. 9(4). [On line] Available from: http://0-weblinks3.epnet.com.innopac.up.ac.za/citation.asp?tb=1&_ua=bo+B%5F+sh [Accessed: 2004-09-16].

Wilson, F. 1996. Human-capital formation and the labor market in South Africa; Challenges for the post-apartheid economy. *American Economic review,* May, 86(2):322-325.

Wolpin, K.I. 1977. Education and screening. *American Economic Review,* (Dec):49-958.