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YOUTH EMPLOYMENT, RECRUITMENT AND A YOUTH-TARGETED WAGE SUBSIDY: FINDINGS FROM A SOUTH AFRICAN FIRM LEVEL SURVEY

Volker Schöer and Neil Rankin

The World Bank
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Volker Schöer* and Neil Rankin*
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* African Micro-Economic Research Unit (AMERU), School of Economic and Business Sciences, University of the Witwatersrand; correspondence: Volker.schoer@wits.ac.za

Introduction

Employment issues are the most serious problems facing South Africa currently. Among these are the problems of unemployment, as well as underemployment or lack of decent work for the already employed, compounded by labour markets that are generally less than efficient in job search and matching. Unemployment in South Africa, by narrow standards, is approximately 25%, an extraordinarily high level, made even more worrying by its stagnancy or growth at different times over the past decade.

However, although such levels of unemployment have detrimental effects on all members of society, they do affect groups differentially. Thus, unemployment rates are consistently, significantly higher for women, Africans, people from rural areas, and the less educated. Unemployment is highest, too, amongst the youth in South Africa, and much higher than international norms, despite rising unemployment amongst youth globally in the past decade (Banerjee et al, 2007 & 2008).

In South Africa, youth is officially defined as people aged between 14 and 35 years old; however, this is not in line with international definitions, which usually demarcate the 16 to 24 year old group. In fact, South Africans aged 25 to 35 have unemployment rates close to the national average, whereas the 14 to 24 age group have much higher unemployment rates (Altman, 2007).

With such high unemployment rates, and also very long periods between school and the first job, the options for finding a first job become crucial for young people in particular (Banerjee et al, 2008). The statistics reflect that job search and matching is very poor in South Africa, and young people are at particular risk of becoming discouraged and exiting the labour force because of high job search costs with low probability of finding employment. Unfortunately, most findings on labour market outcomes in South Africa are established using only supply side (worker) data while determinants of the demand side (firms) are generally unknown. This is mainly driven by the availability of regularly collected supply side data and the paucity of demand side data in South Africa.

The aim of this paper is therefore to shed some light on the employment process of young South Africans and to investigate firm level responses to the implementation of a targeted hiring voucher for young job seekers aged 20-24.

The first section of the paper outlines the conceptual framework used to investigate factors that determine employment of young workers and the impact of a targeted wage subsidy. The second section presents findings from a firm survey illustrating the firm characteristics that are associated with employing young

workers and responses to a hypothetical wage voucher. The third section discusses the findings in the light of the theory while the fourth section concludes.

Labour market matching and hiring vouchers

Employment rates and wages represent equilibrium outcomes of the interactions between firms (demand side) and workers (supply side) in the labour market. Due to various kinds of frictions, labour markets are characterised by imperfect information which makes job matching of job seekers and firms a non-trivial and costly activity (Pissarides 2000). Firms have to generate a pool of suitable applicants through advertising of the job and then screen applicants to find the one candidate whose characteristics are most suitable to the requirements of the job. Job seekers on the other hand have to find firms with suitable vacancies. Once they have found a firm with a suitable vacancy, job seekers apply and have to convince the employer that they are the most suitable candidates compared to all other applicants. The outcome of this matching process is eventually driven by the overlap between the firm's recruitment channels and the job seeker's search methods (Gorter *et al* 1993; Lindeboom *et al* 1994; Russo *et al* 2000; Schöer *et al* 2010 for South Africa).

Both, firms and job seekers, face an optimization problem with regards to their choice of their search/recruitment behaviour (see Holzer 1987 for firms' recruitment optimization; Devine & Kiefer 1991 for job search optimization; and Schöer & Leibbrandt 2007 for job seeker strategies in South Africa) in order to overcome two main problems: information dissemination and asymmetric information. Firms and job seekers in the labour market face these two problems during the extensive margin and the intensive margin of their search process. Search at the extensive margin allows both sides to gather information about possible options, i.e., more vacancies for the job seeker and more applicants for the firm. Search at the intensive margin provides more detailed information on already identified options, e.g. the job requirements and work conditions to the job applicant and the suitability of the applicant to the firm (Calvo-Armengol 2006). The ability of the search/ recruitment channels to overcome the information problems at the extensive and intensive margin of search determines the matching quality which itself is reflected in the wage.

Especially in a slack labour market characterized by mass unemployment like the South African labour market where the supply of labour significantly exceeds the demand for labour, one can expect the demand side (firms) to have more of an influence on process and the outcomes of the matching process as they can decide on what type of labour they want to employ and how they want to employ it.

Holzer (1987) outlines the firm's optimization problem during the hiring process (see also Pellizzari, 2005). He states that hiring follows "an employer search model in which the firm chooses its hiring policies as a reservation level of perceived productivity in the job applicant when hiring for a particular vacancy" (Holzer, 1987: 11). The firm will try to maximize profit by:

$$\text{Max } E(\text{profit}) = P_{\text{hire}, t} * E(\text{profit} | \text{productivity of applicant}) + (1 - P_{\text{hire}, t}) * E(\text{profit})_{t+1} - C_{\text{hire}, t} \quad \text{eq (1)}$$

The equation illustrates that a firm aims to maximize its expected profit that stems from filling a vacancy given the probability of finding and hiring an applicant ($P_{\text{hire}, t}$) with the required characteristics (productivity level of the hire based on the quality of the match between the characteristics of the job applicant and the job requirements) and the cost of the hire ($C_{\text{hire}, t}$). The cost of the hire includes the actual cost of advertising the vacancy and the screening cost as well as any additional training cost to ensure that the quality of the match between the applicant and the job requirement yields the optimal productivity level. One can expect firms to be more willing to provide job training if the training improves the quality of the match and the firm is able to recoup the benefits of this investment. However, the firm can only evaluate the true productivity level of the applicant after a sufficient period of time has passed. Thus, when the firm realizes that the appointment did not yield the required (acceptable) matching quality, it will try to terminate the employment relationship which can imply significant retrenchment costs.

A problem arises when the firm is not able to determine the true productivity level of the applicant and makes an appointment with substantial uncertainty but also faces significant retrenchment costs. In such cases, firms are less willing to experiment with applicants whose productivity level is most difficult to establish in order to reduce the risk of being stuck with a low quality match that is costly to terminate (see Levinsohn 2007; Go *et al* 2009).

Thus, the productivity signal of the applicant is crucial in the matching process. Without an appropriate and reliable productivity signal, the matching process includes a high degree of uncertainty on the side of the firm. The more difficult it is for the firm to establish the true productivity level of the applicant the less willing the firm is to engage in an employment relationship with high hiring costs (including training) and/or retrenchment costs. This clearly also affects the firm's decision to invest in the human capital of the new hire. We can expect the firm to invest in the new hire's human capital when the new hire exhibits characteristics that indicate that he/she is trainable; when the firm expects to benefit from the investment (determined by the firm's future growth expectations and how long it anticipates the employment relationship with the new hire to last); and the larger the impact of the matching quality on the expected profit.

This, though, represents a major obstacle to young job seekers who can only signal their productivity potential through their performance at school. However, school performance signals can only act as productivity proxies when employers are confident in the signaling ability of school performance scores. While educational qualifications are generally able to fulfill this function, only completed secondary schooling (matric) and further qualifications seem to be considered trustworthy in South Africa (Wittenberg 2002; Duff and Fryer 2004, Levinsohn 2007). Thus, school leavers with less than completed secondary schooling who are looking for unskilled jobs will be least able to convince employers of their productivity levels.

Why then is getting the first job important for the work-life trajectory of the applicant? Work experience is crucial for the subsequent work-life trajectory due to the productivity signaling ability of previous work experience. A subsequent employer can use the fact that someone was employed before as a partial signal that another firm was willing to engage in the employment relationship. Furthermore, if the applicant received training from the previous employer, it does not only act as a signal that the previous employer considered it a worthwhile investment but it also reduces the hiring cost of the subsequent employer as he/she can potentially build on the existing human capital gain from the previous employment.

South African firms optimize their recruitment behaviour in the following environment: 1) a constant stream of unskilled job applicants whose productivity levels are difficult to establish; and 2) facing relatively high retrenchment costs. This, in the line of the above considerations, should lead to the following recruitment behaviour: 1) firms are less likely to advertise jobs for which they already experience a high applicant arrival rate; 2) firms are more likely to hire applicants whose productivity level can be established relatively costlessly; and 3) firms will use recruitment channels that allow them to gather trustworthy information about the applicant without incurring high recruitment costs. Thus, unskilled job seekers, who make up the majority of the unemployed, will find it difficult to locate vacancies that are not advertised; firms are more likely to employ workers with work experience as this can be used as a reliable productivity signal; and firms will use social networks to establish a pool of applicants and to establish a trustworthy productivity signal for unskilled jobs.

In such an environment, young unskilled job seekers are systematically disadvantaged. A targeted wage subsidy for young workers would reduce the cost of a hire of a young applicant whose productivity level is difficult for the employer to establish. Thus, the wage subsidy would allow firms to “experiment” with the hire of a young applicant over a more expensive older worker in whose productivity level the employer is more confident (see Levinsohn 2007).

We use the above conceptual framework to investigate the possible impact of a targeted youth wage subsidy on the firms' workforce compositions, training and recruitment behaviour. In particular, we look at the firms' current employment patterns, recruitment and training and discuss, following the theoretical framework, how lower wage costs due to the youth wage subsidy might incentivize firms to change their employment behaviour towards young employees.

Data

As part of the Labour Market Entry Survey (LMES) study, the African Micro-Economic Research Unit at the University of the Witwatersrand collected information on South African firms via telephonic interviews. The aim of these firm surveys was to establish responses to hypothetical youth-targeted wage voucher questions and to relate these responses to firm characteristics their recruitment behaviours.

The sample of firms was drawn from two different sources: firm contact information obtained through responses of employed young Africans during the LMES as well as from CIPRO data. While the firms drawn from the LMES are a random draw of firms that hire at least one young African employee, the firms from the CIPRO data are randomly contacted but limited to firms that employ less than 200 workers and operate in the manufacturing sector. The firms in the CIPRO data set are limited as their information is used to randomly assign hiring vouchers to firms in the manufacturing sector. Therefore, enumerators were instructed to use skeleton versions of the full questionnaire when firms indicated that they did not have time to answer the full questionnaire. In total, a full set of information for 97 firm and shortened survey versions for 15 firms have been collected and captured.

The survey includes questions on firm characteristics, an extensive recruitment section and questions on the firms' recruitment behaviour in response to a hypothetical targeted wage voucher for young workers. Specifically, firms were asked to indicate their likely changes in demand for young workers if their wages were subsidized up to a maximum of R833 per month for a six month period. Young workers are defined as workers aged 20 -24.

Results

Workforce composition

The following section presents descriptive findings of the firm survey. Given the relatively low number of observations, we report averages as well as medians to account for the impact of outliers. In particular, the data set includes one very large company with 18000 employees.

Table 1: Composition of workforce, total workforce (2010)

	obs	mean	median	highest	lowest
Total employees	112	376	49	18000	2
Permanent full time	102	325	30	14400	0
Contract full time	82	158	0	9027	0
Permanent part time	78	19	0	1260	0
Contract part time	75	39	0	1800	0
Skilled	97	106	6	3600	0
African	102	312	42.5	15000	0
Female	102	165	10	7200	0

Table 2: Composition of workforce, young employees (age 20-24) (2010)

	obs	mean	median	highest	lowest
Total young employees	104	143	8.5	10000	0
Permanent full time	81	97	3	4800	0
Contract full time	64	24	0	1000	0
Permanent part time	63	53	0	3200	0
Contract part time	64	16	0	1000	0
Skilled	75	17	0	500	0
African	79	144	8	8000	0
Female	78	71	1	4000	0

Tables 1 and 2 show the composition of the workforce in the firms. The median firm in the sample employed 49 workers, while the median number of young workers was around 9. Across the firms, the majority of the employees are African and unskilled. On average, the share of skilled workers in the total workforce is larger than the share of skilled young workers of total young employees. Thus, the firms' workforce compositions suggests that firms are less likely to employ young workers between the ages of 20-24 and that the younger workers are less likely to be skilled employees. However, the comparison of the total employee composition to the young employee composition is limited due to the high number of missing observations especially for the young employees.

Firms report little recruitment for the year 2010. Of the 112 firms, the median firm hired five new workers (41 mean) with a median number of 3.5 for unskilled workers (38 mean). With respect to the young workers, only 2 young workers were hired by the median firm (31 mean) and only 1 young unskilled worker was hired at the median (24 mean). This low level of demand could be a reflection of the financial crisis which seemed to have had its strongest impact on the employment of young workers (Altman 2010). Table 3 indicates that 22% of the firms in the sample did not hire any new employees in 2010 while a total of 57% of the firms did not hire a single young unskilled worker in 2010. Of the firms that did hire in 2010, the majority hired relatively few new employees in the range of one to five.

Table 3: Number of new employees hired in 2010

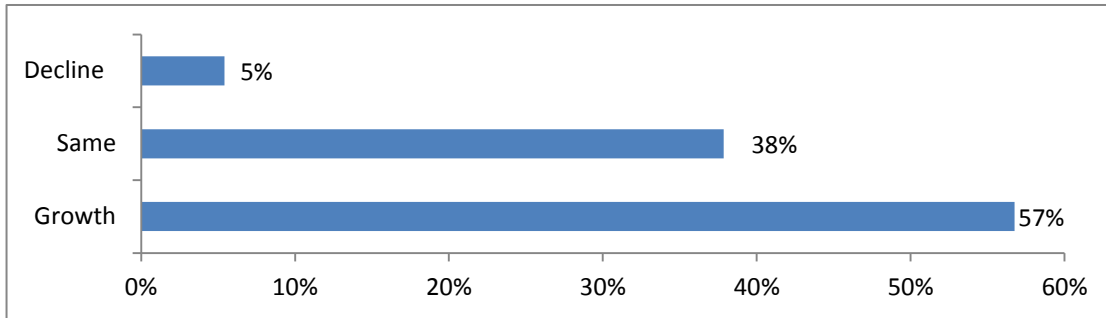
	0	1 to 5	6 to10	11 to20	21 to 50	51 to 100	101 to 500	501 to 1000	1000+
New employees (total)	22%	37%	9%	12%	10%	4%	5%	1%	1%
Unskilled	43%	23%	7%	10%	9%	2%	4%	2%	0%
Young (total)	50%	22%	9%	5%	6%	5%	1%	2%	0%
Young & unskilled	57%	20%	8%	5%	5%	3%	2%	1%	0%

The relatively low demand for unskilled workers is further supported by the fact that only 20% of the firms indicated that they had vacancies for unskilled workers at the time of the interview.

Expected growth of workforce

The average firm expects to grow its workforce by 26% (5% median) over the next two years. However, only 57% of the firms in the sample expect to grow its workforce while 43% expect to keep the same amount of workers or even reduce its workforce (see graph 1).

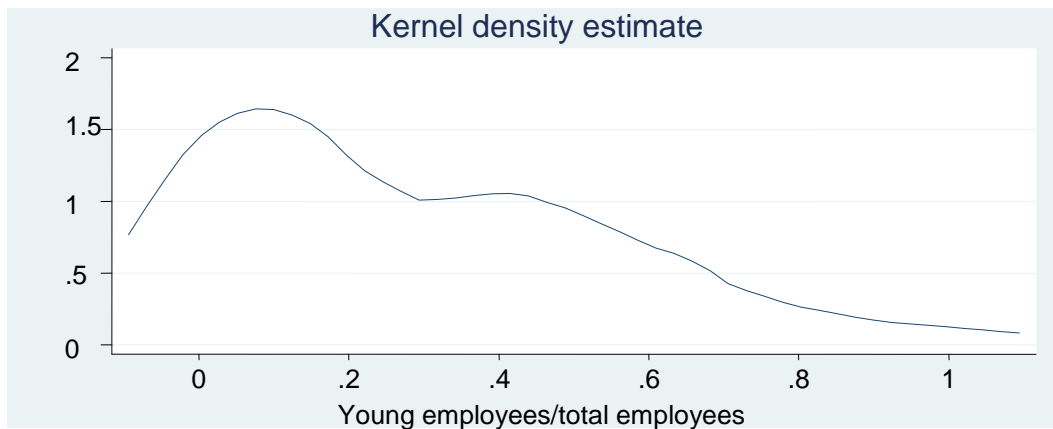
Graph 1: Expected workforce changes over the next two years (2010)



Patterns of young worker employment

Graph 2 indicates that most firms have a relatively low share of young employees in their workforce. In the average firm, young employees represent around 25% of the total workforce with 14 firms of the sample not employing any young people (aged 20-24) at all.

Graph 2: Distribution of young employees to total employee ratio (2010)



Regression 1 shows the association between firm characteristics and the share of young employees in the firms' workforce.

Regression 1: OLS regression of ratio of young employees to total number of employees

	(1) Young employees/ total workforce (OLS)	(2) Young employees/ total workforce (OLS)	(3) Young employees/ total workforce (OLS)
Age (log)	-0.0642** (0.0276)	-0.162* (0.0876)	-0.143* (0.0849)
Age squared (log)		0.0202 (0.0173)	0.0199 (0.0167)
Family business	-0.0833 (0.0552)	-0.0773 (0.0553)	0.000131 (0.0595)
Unionized firm	-0.0886 (0.160)	-0.0595 (0.162)	0.133 (0.164)
Firm size (log of total employees in 2010)	0.0182 (0.0243)	0.0185 (0.0242)	0.0196 (0.0237)
Union* firm size	0.0155 (0.0358)	0.00911 (0.0361)	-0.0250 (0.0359)
Manufacturing			-0.152** (0.0749)
Community/social services			0.0821 (0.0792)
Financial/business services			0.0142 (0.105)
Hotel/ catering			0.175 (0.115)
Construction			0.164 (0.155)
Constant	0.405*** (0.0877)	0.498*** (0.118)	0.432*** (0.123)
Observations	93	93	92
R-squared	0.110	0.124	0.262

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Controlling for the size of the firm¹ and other firm characteristics, regression 1 indicates that younger firms are more likely to have a higher share of young employees in their workforce. Compared to the retail and wholesale sector, which generally employs a larger share of young employees, the manufacturing sector is more likely to have a lower share of younger employees in its workforce. This result, though, might be driven by the selection of the sample as all interviewed firms other than the manufacturing sector employed at least one young worker.

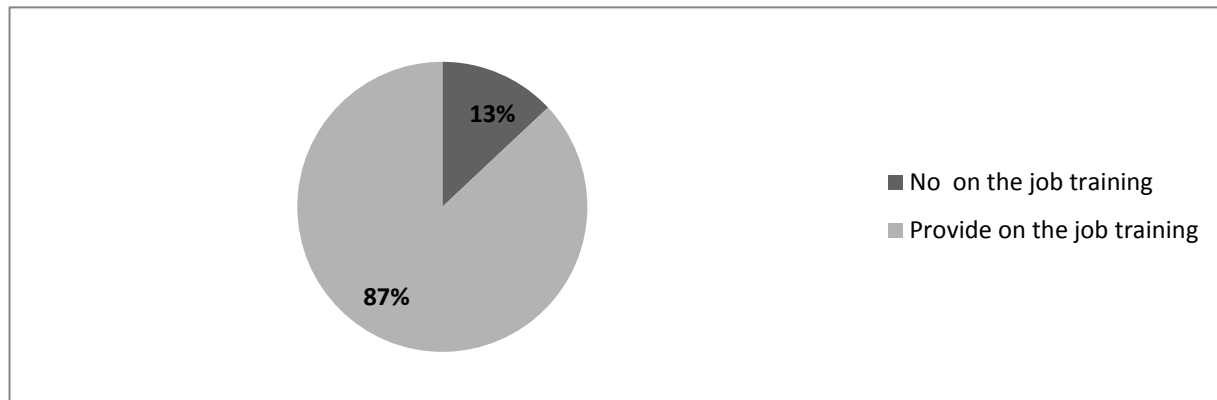
In summary, while young employees already comprise only a relatively low portion of the firms' workforce, the demand for unskilled young workers has been dampened by the financial crisis.

¹ To account for the possible impact of the outlier (firm employing 18 000 employees) as well as a few other very large firms, we use the log of total number of employees

Skills training

As is illustrated in graph 3, a large proportion of the firms (87%) in the sample provide training to its new employee.

Graph 3: Firms providing on the job training to new employees (2010)



The probability of providing training increases with the share of young employees in the total workforce as is shown in regression 2. This finding is in line with our expectations as it seems to indicate that employing young workers is more costly as it requires more training.

Regression 2: Probit model of firm providing job training (marginal effects)

VARIABLES	(1) Providing job training (probit)	(2) Providing job training (probit)
Age (log)	0.0115 (0.0315)	0.0763 (0.0953)
Age squared (log)		-0.0137 (0.0189)
Family business	0.0151 (0.0496)	0.00987 (0.0495)
Unionized firm	-0.525 (0.378)	-0.535 (0.370)
Firm size (log of total employees in 2010)	-0.00125 (0.0216)	-0.000444 (0.0211)
Union*firm size	0.105** (0.0493)	0.106** (0.0480)
Young employees/ total workforce	0.322** (0.156)	0.329** (0.158)
Observations	90	90

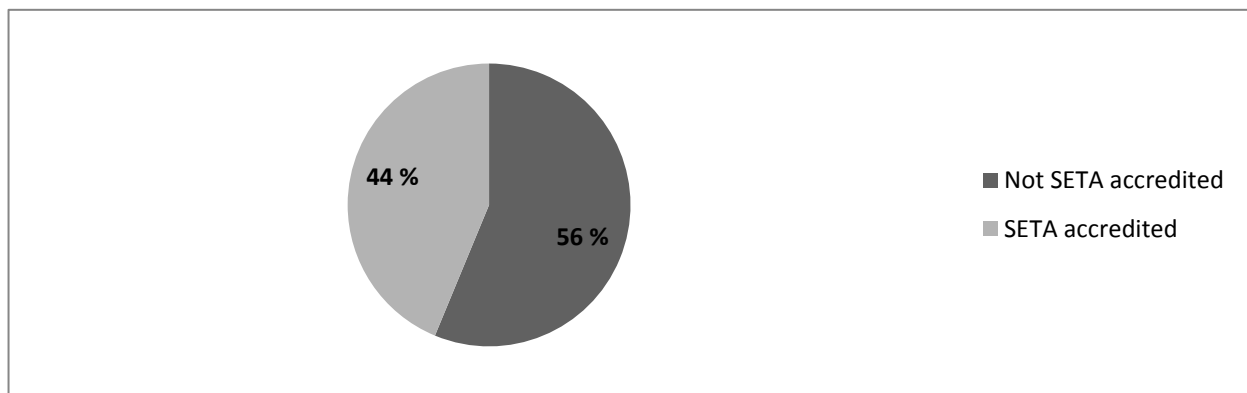
Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Training is also positively associated with an increase in the employment numbers of unionized firms.

SETA accredited training

It is noteworthy that, conditional on providing job training, only 44% of the firms in the sample provide Sector Education & Training Authority (SETA) accredited job training. Thus, firms seem to provide very firm specific training which is not necessarily transferable to other jobs. Furthermore, SETA accredited training allows workers to use the accreditation as a productivity signal when applying for a different job.

Graph 4: Firms providing SETA accredited job training to new employees (conditional on providing training)



As the output of regression 3 shows, the probability of providing SETA accredited training is negatively correlated with the share of young employees (also not statistically significant) which suggests that young employees are less likely to be exposed to SETA accredited training.

On the other hand, SETA accredited training is strongly positively correlated with the size of the firm and the presence of a union at the firm. Larger firms might be able to use the SETA training system more efficiently for their training purposes as they are more likely to have dedicated human resource departments that can arrange and organize for SEAT accredited training that is relevant for the firm.

The positive impact of the presence of a union at the firm suggests that unions can potentially exert pressure on management to provide accredited training to its workforce rather than firm specific training only.

Regression 3: Probit model of firm providing SETA accredited job training (conditional on providing training, marginal effects)

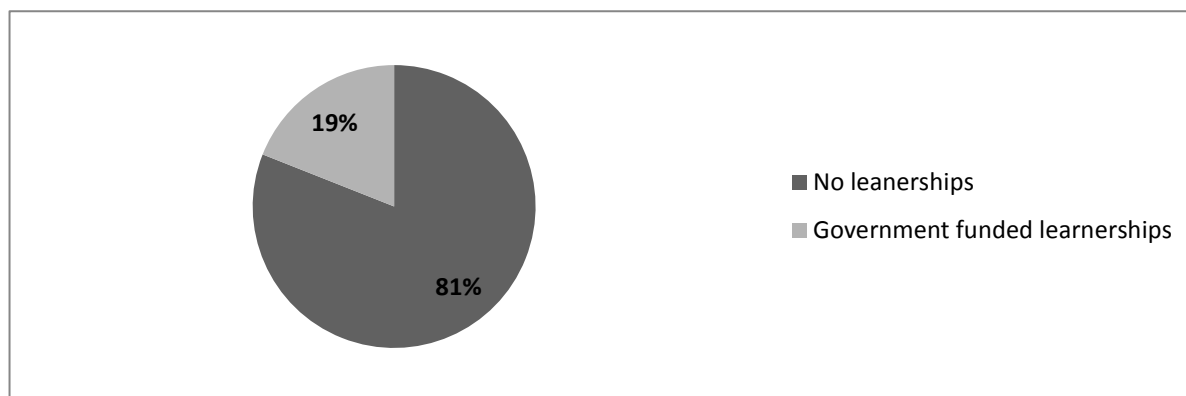
	(1) Seta accredited training (probit)	(2) Seta accredited training (probit)	(3) Seta accredited training (probit)
Age (log)	-0.0413 (0.0604)	-0.245 (0.186)	-0.257 (0.194)
Age squared (log)		0.0399 (0.0347)	0.0427 (0.0360)
Family business	0.0189 (0.132)	0.0421 (0.135)	-0.00209 (0.179)
Unionized firm	0.807*** (0.202)	0.853*** (0.171)	0.832*** (0.198)
Firm size (log of total employees in 2010)	0.271*** (0.0763)	0.278*** (0.0747)	0.277*** (0.0843)
Union* firm size	-0.185** (0.0938)	-0.204** (0.0926)	-0.195* (0.102)
Young employees/ total workforce	-0.148 (0.251)	-0.160 (0.247)	-0.146 (0.276)
Manufacturing			0.0632 (0.220)
Community/social services			0.0688 (0.199)
Financial/business services			-0.0770 (0.208)
Hotel/ catering			-0.0588 (0.275)
Construction			0.0995 (0.418)
Observations	74	74	73

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Government funded learnerships

Only around 19% of the firms in the sample offer government financed learnerships to young employees.

Graph 5: Firms offering government funded learnerships



As regression 4 shows, family businesses are less likely to offer government funded learnerships to young employees. The share of young employees in the total workforce, the size of the firm, as well as the presence of a union at the firm are positively associated with the provision of a government funded learnership but none of these is statistically significant. Compared to the retail and wholesale sector, all other sectors show a positive association with the provision of government funded learnerships but only the community and social service sector is statistically significant.

Regression 4: Probit model of firm offering government funded learnerships (marginal effects)

	(1) Government funded learnership (probit)	(2) Government funded learnership (probit)	(3) Government funded learnership (probit)
Age (log)	0.000432 (0.0344)	-0.0104 (0.107)	-0.00475 (0.0915)
Age squared (log)		0.00212 (0.0198)	0.00432 (0.0169)
Family business	-0.138** (0.0655)	-0.138** (0.0656)	-0.0986 (0.0734)
Unionized firm	0.0787 (0.222)	0.0829 (0.226)	0.294 (0.275)
Firm size (log of total employees in 2010)	0.0330 (0.0367)	0.0332 (0.0368)	0.0163 (0.0353)
Union* firm size	0.00719 (0.0470)	0.00635 (0.0476)	-0.0168 (0.0443)
Young employees/ total workforce	0.0943 (0.130)	0.0919 (0.131)	0.0929 (0.125)
Manufacturing			0.0307 (0.131)
Community/social services			0.345* (0.183)
Financial/business services			0.249 (0.246)
Hotel/ catering			0.110 (0.244)
Observations	90	90	86

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

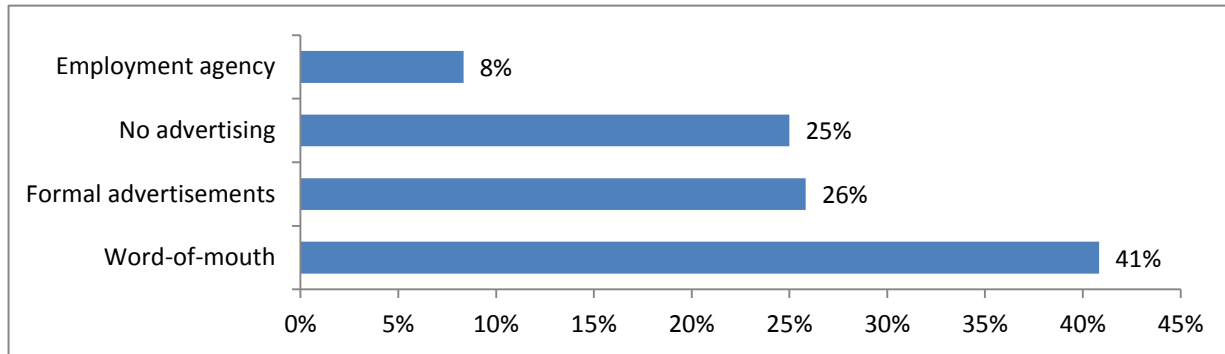
In summary, the majority of firms do provide training to their new employees but relatively little accredited training which employees could take further to signal the firms' investment in the worker's human capital. Especially for the training of young employees, firms seem to be less willing to invest in costly training.

Recruitment and matching

Following the theoretical considerations in the earlier section of this paper, firms were asked to report on their recruitment behaviour for skilled and unskilled positions.

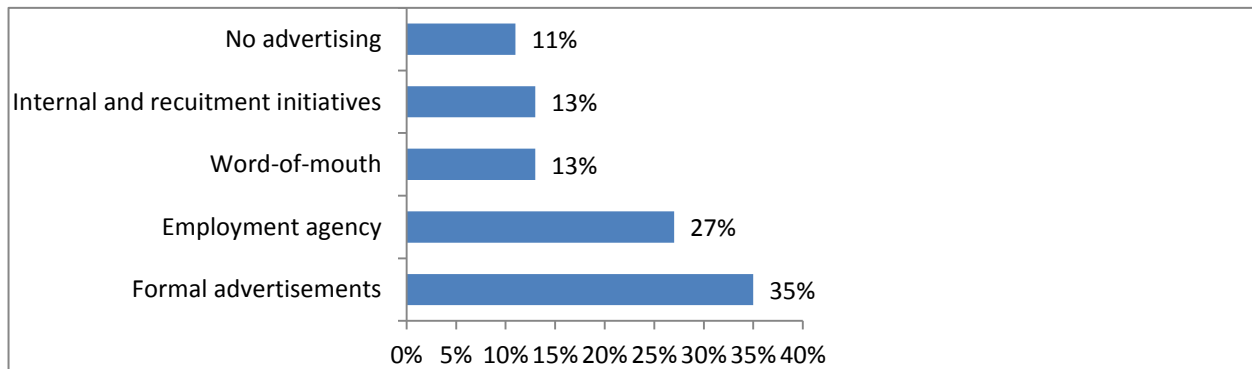
Graphs 3 and 4 show the preferred channels to advertise unskilled and skilled jobs, respectively. 66% of the firms in the sample claim that they either do not advertise unskilled jobs (25%) or rely on word-of-mouth advertising (41%) to create a pool of applicants. Only 26% of the firms use formal channels of advertisements (newspaper and public notice boards) to advertise unskilled vacancies while the remainders (8%) use labour brokers or public employment agencies. Thus, without any attachment to the labour market through social contacts, unskilled job seekers are very unlikely to locate suitable vacancies.

Graph 6: Main channel to advertise unskilled positions



Advertising of skilled vacancies represents a very different picture. 75% of the firms indicate that they prefer to announce the availability of skilled positions to a wider audience. Specifically, 35% use formal advertisement channels, 27% use public and private employment agencies and 13% engage in recruitment initiatives at schools and universities. This reflects the need of firms to create a pool of suitable applicants for skilled positions.

Graph 7: Main channel to advertise skilled positions



For unskilled jobs, however, firms are less willing to incur advertising costs (as is in line with our expectations given the theory of recruitment optimization). This is not surprising given the high applicant arrival rate of unskilled job applicants that firms experience.

The median firm faces 15 applicants per month enquiring about an unskilled position (average 55 applicants) which presents firms with a constant supply of unskilled workers. Thus, the high applicant arrival rate ensures that firms experience a constant pool of workers for jobs with low job requirements.

Regression 5: OLS regression of average number of unskilled applicants approaching firm per month

	(1) Avg. number of unskilled workers approaching firm per month (OLS)	(2) Avg. number of unskilled workers approaching firm per month (OLS)	(3) Avg. number of unskilled workers approaching firm per month (OLS)
Age (log)	9.264 (13.45)	-83.81** (39.74)	-87.71** (40.95)
Age squared (log)		19.71** (7.952)	20.77** (8.192)
Family business	19.01 (25.88)	20.76 (25.10)	29.25 (27.83)
Unionized firm	-206.1*** (73.57)	-168.8** (72.91)	-143.0* (79.39)
Firm size (log of total employees in 2010)	3.070 (11.13)	2.945 (10.79)	7.101 (11.18)
Union* firm size	50.27*** (16.44)	42.37** (16.26)	36.33** (17.32)
Young employees/ total workforce	56.96 (48.97)	42.65 (47.83)	27.65 (53.76)
Manufacturing			-19.02 (36.62)
Community/social services			-3.515 (37.27)
Financial/business services			-18.71 (51.30)
Hotel/ catering			23.56 (54.06)
Construction			-24.43 (85.67)
Constant	-17.58 (44.60)	75.47 (57.26)	71.06 (62.30)
Observations	88	88	87
R-squared	0.252	0.305	0.332

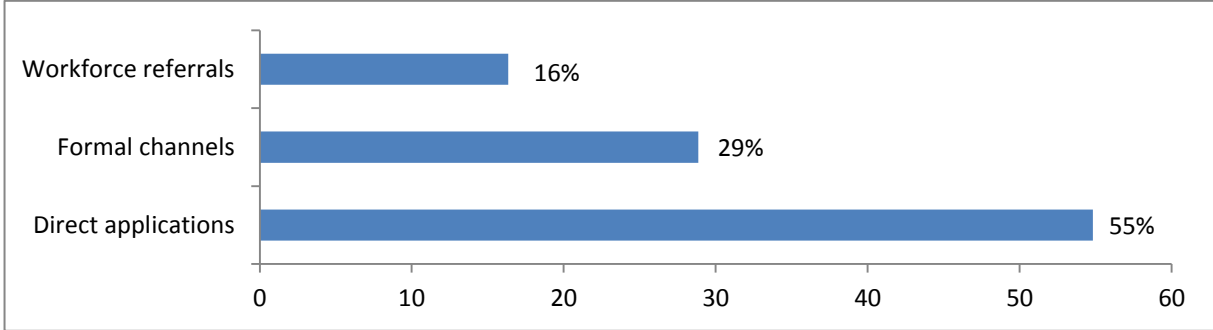
Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

As regression 5 shows, the more visible a firm (larger and unionized) the more likely it is to experience an increasing number of applicants. Older firms, on the other hand, are less likely to experience a high number of applicants. Also, compared to wholesale and retail stores, as well as hotel and catering

services, all other sectors experience a lower number of unskilled job applicants. This might reflect the visibility of the firms.

The number of unskilled applicants has to be seen in relation to the demand of unskilled workers. We use the number of unskilled workers hired in 2010 as a proxy of the annual demand for workers in order to calculate the number of unskilled applicants for each new hire. We have to upscale the average monthly number of applicants by multiplying the average monthly number of applicants by 12 to get the annual applicant arrival rate. Therefore, in 2010, for each new unskilled hire the firm on average experienced 177 applicants over the year (24 median). It is therefore not surprising that it only takes the median firm less than 1 week (2 weeks average) to fill an unskilled position while a skilled position takes the median firm around 1 month (2 months on average) to fill.

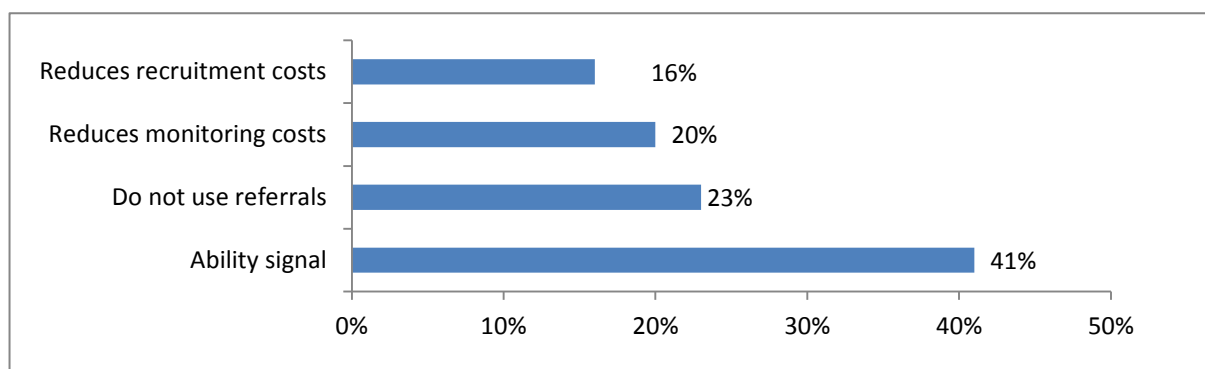
Graph 8: Main channels through which unskilled applicants approach firms (%)



As is shown in graph 8, the majority of the unskilled applicants (55%) approach firms by directly enquiring about vacancies at the gate of the company. Around 29% of the applicants respond to newspaper advertisements or send their CVs to the company. Only 16% of the applicants approach companies through someone who works at the company itself.

Workforce referrals, though, is the preferred recruitment channel for unskilled positions followed by formal channels of applications. Firms least prefer direct applications at the gate of the company as a recruitment channel. Thus, while firms are mainly approached by unskilled job seekers at the gate, they are less likely to inform these applicants about vacancies and/or consider them in the pool of applicants.

Graph 9: Reasons for firms' preference of referrals in the recruitment of unskilled labour



As is shown in graph 9, 41% of the firms report that the advantage of using referrals lies in the reliability of the productivity signal obtained from the referral while a further 20% see it as the best way to reduce future monitoring costs after the hire. Thus, 61% of the firms consider referrals the best way to ensure a high quality match during the recruitment process.

In the light of these findings, young job seekers could face two major obstacles to finding employment: 1) the lack of a trustworthy productivity signal which would force firms to take a chance when hiring a young job applicant; and 2) limited access to relevant job market information as the size of a workers' social networks tend to increase with employment experience.

According to Levinsohn (2007), the wage voucher would allow firms to be more risk taking and employ young unskilled applicants at a lower wage cost. To investigate the possible response of firms to the implementation of a targeted wage subsidy for young employees, firms were asked how access to wage subsidized young workers would affect their recruitment decisions.

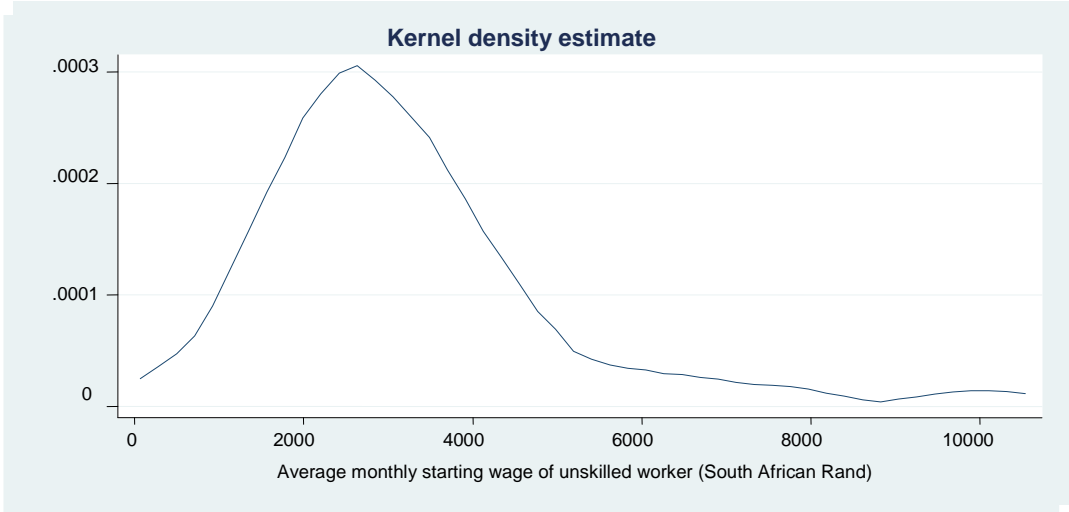
Wages and firm responses to a hypothetical wage voucher

In order to investigate the possible impact of a wage subsidy, we need to understand the current cost of employing an unskilled worker. The median starting wage of an unskilled worker employed by the sample of firms is R2830 (R3222 mean)². Considering these in relation to the proposed wage voucher

² The median starting wage of a skilled worker in the sample is R7000 (mean R8439.5). However, respondents were more reluctant/could not provide wages for skilled workers. Thus, there are very few observations for skilled wages.

amount of R833 yields a wage cost subsidy for a newly hired unskilled worker of almost 30% of the median unskilled starting wage (26% of the mean starting wage of unskilled workers in the sample).

Graph 10: Distribution of monthly starting wages of unskilled workers (2010)



Regression 6 shows determinants of the variation in the monthly starting wage of unskilled workers.

In line with the literature on wage differentials, our sample shows that that the presence of a union leads to a union premium and that larger firms pay higher starting wages to unskilled workers. Family businesses and firms with a higher share of young employees in their total workforce, on the other hand, pay lower starting wages. Compared to the retail and wholesale sector, the financial and business service sector pays significantly higher starting wages

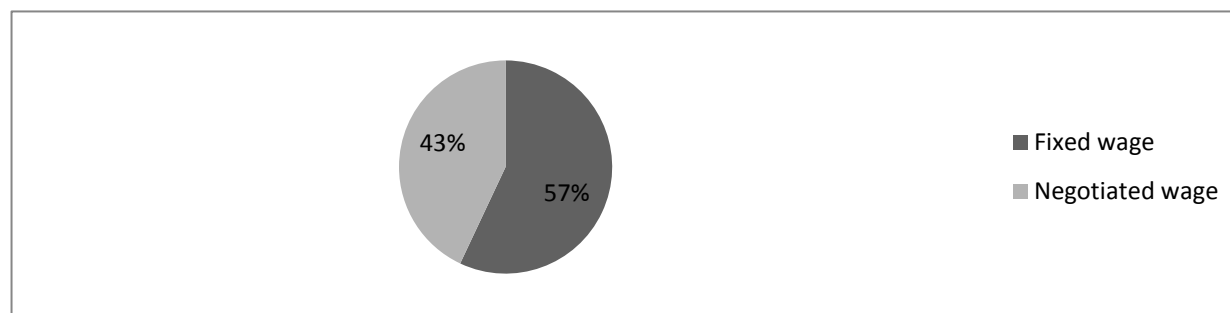
Regression 6: OLS regression of log of monthly starting wages for unskilled workers

	(1) Monthly starting wage (OLS)	(2) Monthly starting wage (OLS)	(3) Monthly starting wage (OLS)
Age (log)	-0.0262 (0.0592)	0.0552 (0.178)	0.0976 (0.169)
Age squared (log)		-0.0170 (0.0350)	-0.0246 (0.0331)
Family business	-0.259** (0.124)	-0.261** (0.125)	-0.194 (0.129)
Unionized firm	0.830** (0.338)	0.809** (0.342)	0.872** (0.338)
Firm size (log of total employees in 2010)	0.151*** (0.0517)	0.152*** (0.0521)	0.126** (0.0498)
Union* firm size	-0.173** (0.0751)	-0.169** (0.0760)	-0.169** (0.0736)
Young employees/ total workforce	-0.452* (0.235)	-0.440* (0.237)	-0.319 (0.236)
Manufacturing			0.120 (0.165)
Community/social services			0.0113 (0.161)
Financial/business services			0.728*** (0.208)
Hotel/ catering			-0.0160 (0.225)
Construction			0.325 (0.350)
Constant	7.648*** (0.212)	7.565*** (0.273)	7.404*** (0.271)
Observations	76	76	75
R-squared	0.232	0.235	0.391

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

With the introduction of the subsidy, one could expect firms and job seekers to negotiate how the subsidy is shared between the two parties. However, only 43% of the firms in the sample negotiate the starting wage of unskilled workers (see graph 10).

Graph 10: Ability of new unskilled employees to negotiate their starting wages during recruitment



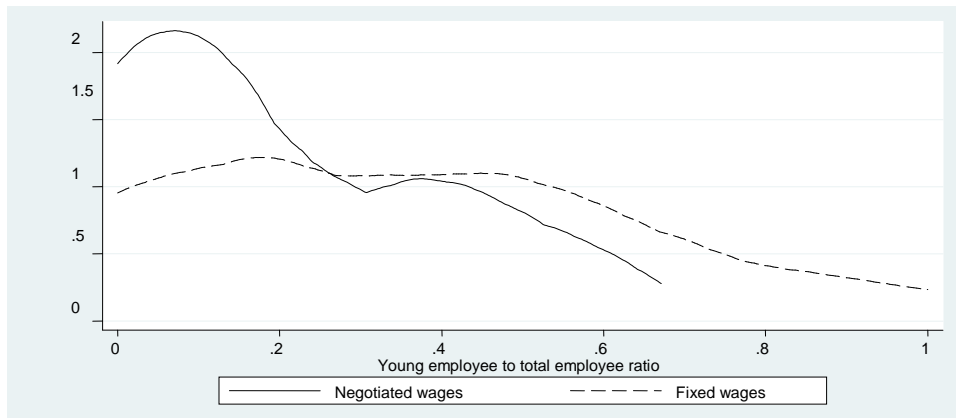
As regression 7 shows, larger firms as well as firms with a higher share of young employees in their total workforce are less likely to negotiate starting wages. This is further reflected in graph 11.

Regression 7: Probit model of starting wages of unskilled jobs being negotiated (marginal effects)

	(1) Wage negotiated (Probit)	(2) Wage negotiated (Probit)	(3) Wage negotiated (Probit)
Age (log)	-0.00160 (0.0681)	0.189 (0.227)	0.185 (0.230)
Age squared (log)		-0.0399 (0.0453)	-0.0422 (0.0461)
Family business	0.0663 (0.128)	0.0677 (0.128)	0.0183 (0.140)
Unionized firm	0.233 (0.359)	0.191 (0.373)	0.0304 (0.413)
Firm size (log of total employees in 2010)	-0.106* (0.0565)	-0.106* (0.0566)	-0.116** (0.0580)
Union* firm size	0.0307 (0.0843)	0.0400 (0.0863)	0.0700 (0.0907)
Young employees/ total workforce	-0.568** (0.265)	-0.547** (0.267)	-0.435 (0.293)
Manufacturing			0.124 (0.182)
Community/social services			-0.0477 (0.186)
Financial/business services			0.0228 (0.250)
Hotel/ catering			-0.223 (0.255)
Construction			0.0383 (0.357)
Observations	80	80	79

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Graph 11: Young employee to total employee ratio relative to ability of negotiating the starting wage



Responses to hypothetical wage voucher

Firms were asked to indicate how many young workers they would employ additionally to their existing workforce if the wages of these new hires were to be subsidized up to 50% (up to a total maximum of R833 per month) for a six month period. 38% of the firms responded positively to this hypothetical scenario and indicated that they would on average hire 7.5 young workers additionally to their existing workforce. The remaining 62% of the firms, however, pointed out that their hiring decision of young applicants with wage vouchers depends on the number of openings that they have, thus they would consider hiring young applicants in response to the wage voucher but not additionally to their existing workforce. This is an interesting finding in itself as it suggests that firms would substitute young applicants for older applicants when faced with the two options in the hiring process.

Regression 8: Probit model of firm hiring wage voucher holders additionally to existing workforce (marginal effects)

	(1) Hiring voucher holders additionally to workforce (Probit)	(2) Hiring voucher holders additionally to workforce (Probit)	(3) Hiring voucher holders additionally to workforce (Probit)
Age (log)	0.0931 (0.0663)	0.107 (0.194)	0.103 (0.198)
Age squared (log)		-0.00292 (0.0372)	-0.00307 (0.0381)
Family business	-0.294** (0.117)	-0.295** (0.119)	-0.215 (0.134)
Unionized firm	0.522* (0.288)	0.521* (0.290)	0.621** (0.266)
Firm size (log of total employees in 2010)	-0.00622 (0.0552)	-0.00629 (0.0552)	-0.00397 (0.0567)
Union* firm size	-0.140* (0.0841)	-0.140* (0.0845)	-0.167* (0.0878)
Young employees/ total workforce	0.805*** (0.258)	0.808*** (0.260)	0.641** (0.282)
Manufacturing			-0.154 (0.175)
Community/social services			0.0240 (0.186)
Financial/business services			0.131 (0.251)
Construction			-0.140 (0.409)
Observations	84	84	81

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Regression 8 shows firm characteristics that are correlated with the probability of hiring young subsidized workers additionally to the existing workforce.

Controlling for sectors and other firm characteristics, firms that already employ a larger share of younger workers in their workforce claim to be more likely to hire additional young workers and thereby grow their existing workforce. Family businesses and larger firms, on the other hand, are less likely to hire wage voucher holders additionally to their existing workforce. Surprisingly, firms that report the presence of a union also report to be more likely to hire voucher holders additionally to their existing workforce. This might rather reflect the skill level of such firm as one would expect firms with a larger share of unskilled workers to be unionized.

All in all, the findings seem to suggest that smaller firms who are already employing young workers are likely to grow in response to the implementation of the wage voucher. This finding is not surprising given that firms that already employ a larger number of young workers in their workforce seem to pay lower starting wages (see findings in regression 7) and the subsidy itself simply reduces the input cost to these firms. Thus, the proposed wage subsidy would potentially have a larger impact on the demand for workers in low wage jobs. Other firms, on the other hand, are more likely to keep the size of their existing workforce constant but might change the composition of their workforce over time by systematically increasing the share of younger employees in the workforce.

Replacement of older workers

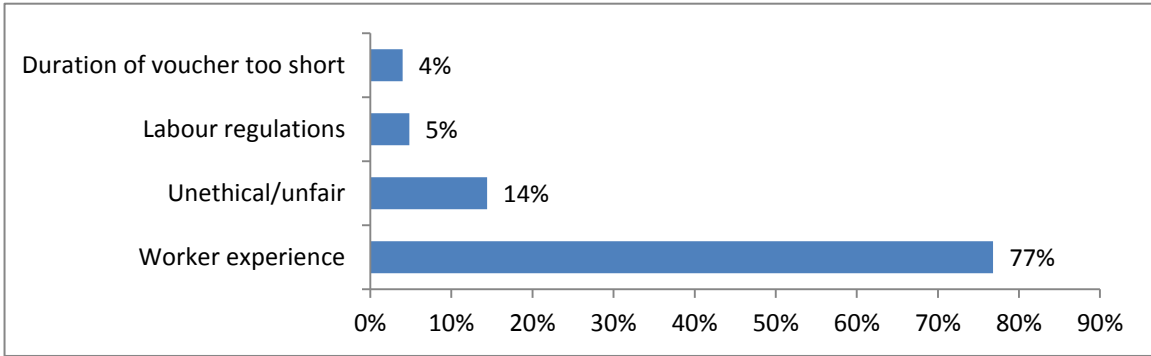
With the introduction of a targeted wage subsidy, only the hiring cost of a particular group of workers would be reduced, in this case young workers aged 20 to 24. Thus, firms would have an incentive to use these subsidized younger workers to substitute workers from other age groups whose wages are not subsidized and therefore are higher.

Replacement of older workers with higher, non-subsidized wages can happen at two places: during the recruitment process whereby the firm has to choose between a young applicant and an older applicant, and/or in the deliberate retrenchment of older workers of the existing workforce to make space for younger employees. The previous findings indicate that all firms would respond positively to the wage voucher and consider hiring voucher holders when approached. Thus, the wage voucher is likely to lead to a systematic preference of younger workers during hiring process when faced with two equally qualified applicants. The second type of replacement would require a more active approach on the side of the employer as he/she would have to retrench an existing, older worker in order to free up a position to be filled with a voucher subsidized, younger worker.

While 27% of the firms say that they would replace (or do not rule it out) older workers with younger wage subsidized workers, 73% indicated that they would not replace older workers of their existing

workforce through the hire of wage voucher holders. As is indicated in graph 12, the majority of firms (77%) that report that they would not replace older workers state the level of experience and loyalty as the main reason for not retrenching older workers and replacing them with younger, wage subsidized workers. A further 14% claim that it would simply be ‘unethical’ or ‘unfair’ do use the younger, cheaper workers to replace older workers in the company. A small proportion of the firms that indicated that they would not replace older workers seem to suggest that they would consider doing so if the voucher period of 6 months was extended or if retrenchment was less restricted by labour regulations and the presence of unions.

Graph 12: Reasons for not replacing older workers with younger, wage subsidized workers



One has to remember that all of the findings on the implementation of a targeted wage subsidy are self reported behavioural changes in response to a hypothetical scenario. These are not actually observed behavioural changes. However, they give an indication of the attitude towards the implementation of a wage voucher.

Discussion

The implementation of the wage subsidy affects the employment behaviour of firms in two ways: on the one hand, firms can use the subsidized worker as a cheaper production input and increase profit. This should be the case especially for firms that can determine the productivity level of the applicants. In this case, we would expect firms to increase their demand for the cheaper input and increase their workforce by hiring more subsidized workers. On the other hand, firms that cannot establish the true productivity level of the applicant can use the subsidy to lower the cost of employing a worker with uncertainty. Here the subsidy acts as an incentive to substitute from one input (older workers whose productivity level is known) to another (younger workers whose productivity level is unknown) without necessarily increasing

the overall demand for inputs. Thus, the lower wage paid to the younger workers simply reflects the quality of the match.

Our findings suggest that younger, smaller firms who pay lower starting wages and operate in sectors which are more suitable for the employment of younger workers are most likely to respond positively to the implementation of the targeted wage voucher by growing their existing workforce through the hire of subsidized workers. This is not surprising if the wage cost of younger workers already makes up a larger share of the firm's production cost and the wage cost reduction due to the subsidy is proportionally higher. One can further assume that these firms that already employ a larger number of young workers are better positioned to establish the productivity level of a young applicant or that the required productivity level for these jobs is low enough that any applicant is a possible match. Therefore, the subsidy would not necessarily have to offset the uncertainty around the applicant's productivity level but rather allow these firms increase profit. A possible outcome of the subsidy could be that a larger share of young job seekers is pulled into low paying jobs. If any employment experience of young workers improves the subsequent employment probability, then it should not matter. On the other hand, if the work-life trajectory of the young workers is dependent on the type of first time employment, then pushing more first time young workers into low paying jobs might not be the desired outcome.

However, the findings also suggest that other firms would respond positively to the implementation of the wage voucher, not by creating new positions but by hiring against open vacancies. These firms seem more likely to be uncertain about the true productivity level of younger applicants but indicate that a lower wage would compensate for a lower quality match. This is in line with the predictions of the theoretical framework: given that current starting wages of unskilled workers are around R3000, it implies that the proposed wage voucher constitutes a significant cost reduction and employers should be more willing to consider employing a young applicant even if they cannot establish the true productivity level of the applicant.

This would reduce the current disadvantage of young job seekers who do struggle to convince employers of their productivity levels. Thus, the proposed wage voucher should affect the workforce composition of the firms in favour of younger workers over time.

One could further assume that the lower wage cost allow firms to invest more in the human capital of the young workers. Thus, firms might be more willing to engage in more costly training that is beyond firm specific training. Especially if this training is accredited and the set of skills are transferable to other jobs, it would allow young workers to progress into other jobs.

But who of the young job seekers is more likely to benefit from the implementation of the targeted wage subsidy? If the main reason for not employing young applicants has been the uncertainty about their productivity levels, one can assume that this problem is more severe for young unskilled job seekers who do not have trustworthy school performance signals. Young job seekers with reliable school signals (matric and further education) are more likely to be hired for jobs that have higher levels of job requirements, i.e., where the quality of the match is increasingly important for the productivity of the new hire. It is therefore questionable if firms will consider the amount of the subsidy sufficient to offset the likelihood of employing a young applicant who applies for a skilled position. On the other hand, the subsidy constitutes a significant portion of starting wages for unskilled workers. Currently, the majority of firms reduce the pool of applicants for unskilled positions to workers who are related to the existing workforce. The use of referrals was explained in terms of allowing the employer to establish the productivity level of the applicant.

With the introduction of the wage subsidy, one could expect two possible scenarios. On the one hand, employers will try and source more young employees through referrals of its existing workforce and young job seekers in households that are already attached to the labour market are more likely to benefit from the implementation of the wage subsidy. In contrast, young job seekers of already marginalized households (without employment and/or other sources of labour market attachment) are likely to remain marginalized. On the other hand, if firms continue to rely on word-of-mouth recruitment, the pool of suitable young applicants is limited by the size of the existing workforce. Thus, one could also expect that firms are more willing to experiment with the employment of young applicants who approach companies directly when that the cost of taking the risk is reduced due to the subsidy.

Furthermore, because employment probabilities are an equilibrium outcome of the demand and supply side in the labour market, the perception by young job seekers of an improved employment probability might increase the search effort of young job seekers which should further increase the employment probability of this age group.

Conclusion

The aim of the paper was to shed some light on the employment patterns of young workers in South African firms and to describe self-reported firm responses to the hypothetical implementation of a targeted youth wage subsidy.

The findings suggest that firms generally employ relatively few young people and that the current recruitment process is likely to create a systematic disadvantage to the employment probabilities of young job seekers. However, the majority of firms in the sample indicate that they would consider hiring young applicants when subsidized although not additionally to their existing workforce. Thus, the wage subsidy is less likely to reduce overall unemployment but one can expect the unemployment rates of the subgroups to change with a favourable change for the younger age groups.

The impact on the matching process and overall wages (as well as wages for the various age groups) in the South African labour market are not clear.

Clearly, one limitation of the current study has been the design of the subsidy question in the survey. Firms were told that the subsidy is only applicable for a six month period and their responses might have been different for a permanent youth wage subsidy or a subsidy that is available for a longer period of time. One can assume that the willingness of firms to employ young workers increases with a longer or more permanent wage subsidy. The same can be said about different amounts of the wage subsidy. The findings in this study are based on a relatively low subsidy (R833) for a relatively short period of time (6 months). It is therefore reasonable to assume that the responses reflect a lower limit to the implementation of a targeted wage subsidy and that the effect might be more pronounced for a longer subsidy period or a larger subsidy amount.

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