

Changing lives of ordinary people through human and social sciences EMPLOYER CHARACTERISTICS & YOUTH EMPLOYMENT IN THE FORMAL SECTOR IN SOUTH AFRICA? AN ASSESSMENT USING NEW NATIONAL INCOME TAX DATA

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INTRODUCTION

- Study uses **administrative tax data** to identify the characteristics of **firms that employ relatively more youth**.
- The policy objective of this exercise is to use these insights to inform policy and programming in the context of youth unemployment
- Through this we hope to **identify where efforts to intensify youth absorption into employment** should be focused to ensure maximum impact in addressing the problem of low youth employment in South Africa.
- Given the fact that we were dealing with a new data source we adopted an explorative approach guided by literature and made use of various econometric models to conduct the analysis within the context of the variables available in the different tax datasets



GROWTH YOUTH UNEMPLOYMENT CONTEXT



Source: LFS (2001 - 2007); QLFS (2008 - 2014), Statistics South Africa



POLICY CONTEXT

Previous graph highlights the fact that youth unemployment is disproportionally high and is a **defining characteristic of South Africa's unemployment** challenge.

- Government commitment to prioritising youth in terms of job creation objectives has been noted in several strategy frameworks, policies and interventions including the National Youth Policy for 2015 to 2020, the New Growth Path, Industrial Policy Action Plan, the 2011 Skills Accord; 2013 Youth Employment Accord and the employment tax incentive
- Concern that there are a large number of youth are not contributing to the productivity of the country and by extension to growth



LITERATURE REVIEW

- Productivity and employment outcomes: Haltiwanger et al. (1999) provides evidence, from U.S Census
 Bureau and firm-level data between 1985 and 1997
- **Differences in the characteristics** of the workforce are significantly related to **differences in productivity** levels.
- Firms which employ more young and prime-age workers, a more educated workforce, less females and less foreign-born individuals are more productive.
 - Find little evidence of a relationship between the changes in productivity and changes in the mix of workforce characteristics



LITERATURE REVIEW

Firm size and employment: Haltiwanger *et al.* (2013) find that *the significant inverse relationship* between firm size and **net job growth rates** found in most literature is **removed when they control for firm age**.

- Finds that although start-ups and young firms are volatile with a high exit rate, they also contribute significantly to job creation.
- Ouimet and Zarutskie (2013) find that **young firms employ more young workers**, *controlling* for firm size, industry, geography and time.
 - Also find that young employees in young firms earn higher wages than young employees in older firms, young employees tend to join young firms with innovation potential and higher growth conditional on survival of firm.

LITERATURE REVIEW

Trade and employment: Were (2007) investigates the **impact of export orientated trade** on **employment outcomes** in Kenya's manufacturing sector between 1990 and 2003, using panel data analysis and firm-level variables

• Finds that export-oriented firms generally employed more workers on average, relative to non-exporting firms, with a shift of firm employment toward a more skilled labour force during the period of trade liberalisation.



LITERATURE REVIEW: DATA & METHODS

Authors	Data	Methodology	Sample
Schoer & Rankin (2011)	 Dependents: Ratio of youth to total workforce, hiring wage voucher holders to workforce, firm provides SETA training, monthly starting wages for unskilled labour. Explanatory: firm age, firm size, firm type, firm sector, presence of union, type of referrals (Holzer 1987). 	 Survey questionnaire to sample of firms in South Africa for wage subsidy OLS Probit 	South Africa
Cieslik et al. (2014)	Dependent: export activity (binary = 1 if firm exports) Explanatory: Labour productivity (sales per employee), firm age, firm size, level of innovation (R&D spending), education (employees with university degrees), foreign ownership, use of foreign technology.	• Probit	Central and Eastern Europe: Armenia, Azerbaijan, the Czech Republic, Estonia, Georgia, Hungary, Latvia, Lithuania, Poland and Slovakia
Edwards et al. (2016)	 Dependent: firm characteristics (firm size, capital-labour ratio, wage per worker, labour productivity). Explanatory: dummy variables for exporter only, importer only, exporter and importer, importation of intermediate goods. 	 OLS with fixed and time effects 	South Africa
Were (2007)	 Dependent: proportion of casual to permanent workers in workforce. Explanatory: real output, wages of casual workers to total wages, exporting status of firm, productive capacity (number of shifts), number of competitors, institutions (firm has unionised employees), share of skilled labour, industry type, location. 	 OLS with fixed and random effects Seemingly Unrelated Regression (SUR). 	Kenya

LITERATURE REVIEW: DATA & METHODS

Authors	Data	Methodology	Sample
Haltiwanger et al. (1999)	 Dependent: productivity (log of firm sales divided by employment) Explanatory: Individual characteristics (age, gender, education, foreign-born). Firm characteristics (firm age, firm size, ownership structure). 	• OLS	United States
Haltiwanger et al. (2013)	Dependent: employment (changes in number of workers).Explanatory: firm size, firm age, no. of firm's establishments	• OLS	United States
Ouimet and Zarutskie (2013)	 Dependent: fraction of employees in age categories, fraction of new hires in age categories, log wage per worker in age categories. Explanatory: industry, firm age, firm size, private vs public firms, location, receives venture capital financing. 	OLS with fixed and time effectsProbit	United States
Page and Soederbom (2015)	Dependent: total employment Explanatory: firm age, firm size, region, productivity, wages	Not specified	Ethiopia
Abowd et al. (1994)	Dependent: total compensation costs per employee Explanatory: education, employee age, gender, location, firm performance (value added per employee), operating income (total assets and sales per employee), share of skilled employees.	Generalised least squares	France
Holzer and Ihlanfeldt (1998)	 Dependent: race of last hired worker, log of starting hourly wage of newly hired worker Explanatory: firm size, presence of union, percentage of firm's customers who are black or Hispanic, occupation of worker, location, industry, education 	• Difference-in- differences-in- differences	United States

DATA DESCRIPTION

Variable	CIT / IRP5 input name	Description	
Proportion of youth aged 15-34	Authors' calculations from	Percentage expressed as ratio of youth to workforce (number of	
	IRP5 data	youth/total workers)*100)	
Proportion of workers who are youth	Authors' calculations from	Binary variable 1 = firms with (10%),(50%),(70%) or more youth	
aged 15-34 in firms (generated for firms	IRP5 data	aged 15-34, 0 = otherwise	
with 10%, 50% and 70% more youth)			
Firm age	taxyear-birth_year	Logarithm of number of years since birth year	
		Firm age cohorts	
Firm size	g_sales	Number of employees (categorical),	
		gross sales (categorical)	
Productivity	g_sales/total workers	Logarithm of productivity expressed as annual gross sales per	
		employee	
Capital intensity	(k_ppe+k_faother)/total	Logarithm of capital intensity expressed as a ratio of fixed assets	
	workers	per employee	
Profitability	g_grossprofit	Logarithm of gross profits	
		Binary variable 1 = firm made profits, 0 = otherwise	
Trade status	cust_impexpind	Indicator for whether firm is importer only, exporter only, both or	
		non-trading	
Labour costs	x_wages	Log of employee wages expense only	
		Wage expenses (categorised)	
Foreign ownership	ITR14_c_fgnhold	Binary variable $1 = \text{firm belongs to foreign holding company , } 0 = /$	
		otherwise	
Industry sector	c_isic4_profcode	Indicator for industry sector of firm (recoded from 4 digit to 1 digit	
		isic codes)	
R&D spending	x_rd	Binary variable 1 = firm spends on R&D , 0 = otherwise	
Training spending	ITR14_x_training	Binary variable 1 = firm spends on training , 0 = otherwise	
		TT HSRC	
Learnerships spending	ITR14_t_deb_lrncmp,	Binary variable 1 = firm spends on learnerships _0otherwise	
	t_deb_lrna		

FIRM AGE AND YOUTH EMPLOYMENT



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FIRM SIZE AND YOUTH EMPLOYMENT



No. of workers

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INDUSTRY SECTOR AND YOUTH EMPLOYMENT



Industry sector

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FIRM'S TRADE STATUS AND YOUTH EMPLOYMENT



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Used alternative methods that have been suggested in literature for estimating similar cross-sectional time series data and panel data

- The **first method** is the pooled ordinary least squares (POLS) which assumes homogeneity across firms
- The **second method** introduced individual fixed effects (FE) into the model which allowed for heterogeneity across firms, giving more efficient estimates
- Hausman test used to verify if fixed effects or random effects are suitable. We reject the null hypothesis that the errors are not correlated with the regressors and conclude that fixed effects are valid.
- Results in paper not presented here





Here we present the results for the probit model consistent with the literature (e.g. Cieslik *et al.* 2014, Ouimet & Zarutskie 2013)

- **Binary dependent variable** where 1 = firms with 10%, 50% and 70% or more youth aged 15-34, 0 = otherwise.
- The probit also allows us to include firm characteristics that are categorical or binary which cannot be included in a pooled OLS or in fixed effects estimations.
- The constructed panel data (IPR5 + CIT) analysed using a probit estimator
- Explanatory variables, different firm characteristics (firm age, firm size, trade status, labour costs, industry sector, learnerships).



RESULT	S	
	50%	or

	10% or more	more	70% or
	youth	youth	more youth
	Marginal	Marginal	Marginal
Firms with youth aged 15-34	Effects	Effects	Effects
Productivity	-0.054***	-0.038***	-0.002
K-L ratio	0.000	-0.001	0.001
Profitability	-0.002	-0.056***	-0.022***
R&D expenses	0.004	-0.011	-0.003
Training expenses	0.027*	-0.002	-0.007
Learnerships completed	-0.154**	-0.003	-0.046
Learnerships registered	0.065**	0.020	0.010
Foreign-owned	0.016	-0.040	-0.004
Firm age (26+)			
0	0.090***	0.312***	0.145***
1-5	0.141***	0.339***	0.179***
6-10	0.114***	0.248***	0.102***
11-15	0.072***	0.158***	0.049***
16-20	0.048***	0.087***	0.020***
21-25	0.016	0.034***	0.001
No. of workers (1-5)			
6-10	0.217***	0.039***	-0.016***
11-50	0.229***	0.071***	0.004
51-100	0.240***	0.158***	0.047***
101-500	0.254***	0.280***	0.105***
501-1,000	0.223***	0.371***	0.217***
1,001+	0.193***	0.424***	0.281***
Gross sales (R1-R1,000,000)			
R1,000,001-R10,000,000	0.169***	0.051***	-0.010**
R10,000,001-R100,000,000	0.247***	0.087***	-0.042***
R100,000,001-R1,000,000,000	0.266***	0.065***	-0.061***
R1,000,000,001+	0.273***	0.131***	-0.073***





	30% 01		
	10% or more	% or more more	70% or
	youth	youth	more youth
	Marginal	Marginal	Marginal
Firms with youth aged 15-34	Effects	Effects	Effects
Labour costs (wages R1-R1,000,000)			
R1,000,001-R10,000,000	0.014***	-0.048***	-0.039***
R10,000,001-R100,000,000	0.019	-0.154***	-0.074***
R100,000,001-R1,000,000,000	-0.044	-0.287***	-0.110***
R1,000,000,001+	0.007	-0.337***	-0.063
Industry sector (manufacturing)			
Agriculture, forestry and fishing	-0.018**	-0.050***	-0.026***
Mining and quarrying	-0.026	-0.067***	-0.060***
Electricity and gas	0.037***	0.091***	0.021
Water supply	0.050**	0.025	-0.033
Construction	-0.003	0.026***	-0.007
Wholesale, retail, transport and accommoda	0.009***	0.080***	0.053***
Communication	0.002	0.167***	0.118***
Finance and insurance	-0.017***	0.030***	0.030***
Real Estate	-0.075***	-0.089***	-0.033***
Professional, scientific and technical activitie	ŧ -0.001	0.070***	0.027***
Public services	-0.034***	-0.047***	-0.005
Recreational and cultural activities	0.013***	0.096***	0.079***
Not specified	0.019	0.022	0.012
Trade status (exports only)			
Imports only	0.002	0.064***	0.034***
Imports and exports	0.007	0.010	0.019**
No trade	0.003	0.068***	0.045***
Observations	56,145	56,145	56,145
Chi-square	16600.36***	5299.30***	3467.24***

dy/dx for factor levels is the discrete change from the base level. *** p<0.01, ** p<0.05, * p<0.1



KEY FINDINGS

we use the **productivity** and **profitability** as proxy to measure the success of a firm the finding that these firms are **less likely** to have a high proportion of youth is worry and raises questions as to how policy can be used to encourage these firms to hire more youth

- Older firms are less likely to have more youth relative to younger firms, whilst medium to large sized firms have more youth compared to small businesses.
- ICT, retail, and the services sectors are more likely to employ younger people compared to public, mining and agriculture sectors. It would be interesting to see the sectoral profile of firms accessing incentives such as the ETI
- Contrary to the literature both importers and non-traders are more likely to have more youth relative exporters.
- High labour cost firms are less likely to employ young people whilst firms registered with SETAs for learnerships are likely to have more youth.

CONCLUSIONS & POLICY RECOMMENDATIONS

The relevance of the study is in relation to **identifying demand side interventions** with respect to the **design** and **targeting** of such interventions in a way that would enhance outcomes e.g.

- the youth wage subsidy and
- the employment tax incentive
- Although the relationship between **labour costs** and the likelihood of a firm employing more young people lands support to these interventions.
- The performance of the ETI thus far might suggest that targeting firms with a greater propensity to employ younger people might enhance outcomes



CONCLUSIONS & POLICY RECOMMENDATIONS Given the contribution of young firms to youth employment **SMME development and support** could play an important role in bolstering youth employment

 The positive link between learnerships and firms who employ more youth highlights the importance of Sector Education Training Authority (SETA) reforms given their key role in the promotion of learnership. The results also indicate that firms need incentives to retain youth once learnerships are completed.



THANK YOU!

