Labour demand and the distribution of wages in South African manufacturing exporters

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Introduction

- Exporting is associated with positive economic outcomes (Foster, 2006)
  - used as a policy tool to generate growth and employment
  - South Africa is no exception
- On a firm-level, what do we know about the linkages between exporting, labour demand and wages?
  - South African literature
    - Rankin and Schoër (2013)
    - Edwards et al. (2016) and Matthee et al. (2016)

Introduction

- This paper is part of the Labour Market Analysis project initiated by UNU-WIDER and National Treasury
  - Use SARS administrative records to investigate the following:
    - Labour demand and wages (exporters vs. non-exporters)
    - Employment growth by exporters
    - Within-firm wage distribution and inequality

Data

- ✓ **Customs data**
  - Export transactions of South African firms 2010-2014
  - Transaction: trader id, tariff code (HS6-digit level), country of destination (market), country of origin (SA), customs value of the transaction and the statistical value
  - Exporters trading > R10 000 per year (covers 99% of exports)
- ✓ **Employee data (IRP5)**
  - Completed IRP5 certificates by employers on behalf of their employee
  - Weighted number of employees per firm
  - Weighted wages per person
  - Weighted wages per firm
- ✓ **Company income tax data (CIT)**
  - IT14 form & ITR14 form (2010-2014)
  - Plant and equipment (to measure capital intensity)
  - Employee Expenses including Directors (to measure labour cost)
  - Gross Income (as a measure of sales)
  - Manufacturing sector (ISIC 4 classification: codes 1010 – 1033)

Merge = Conjunction table

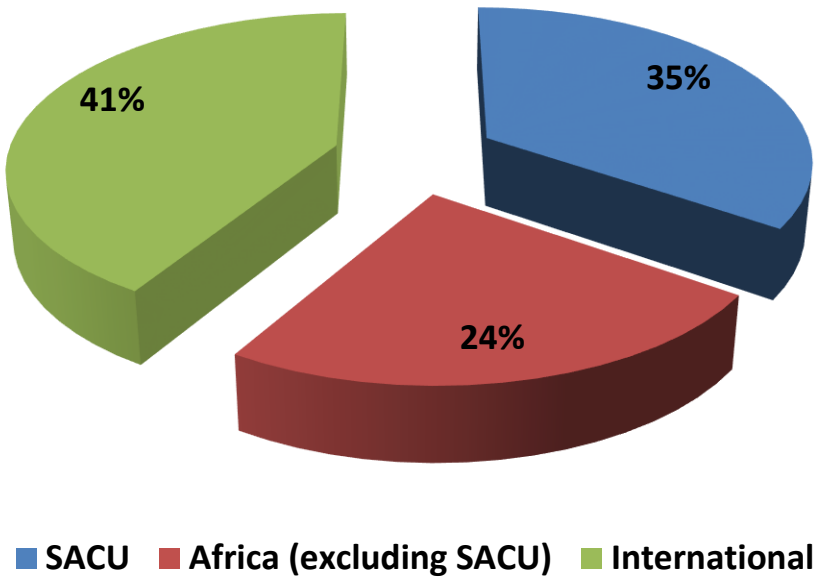
Descriptive statistics

Number of manufacturing non-exporters and exporters

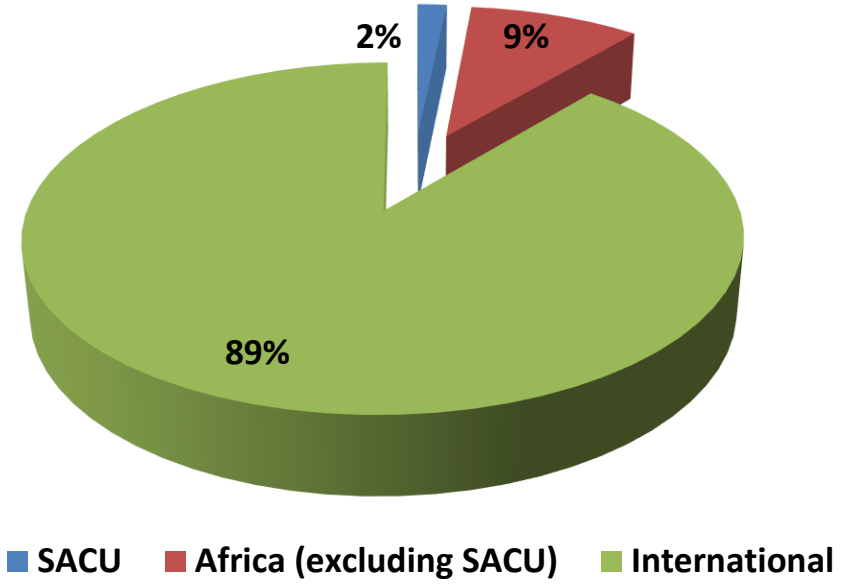
	2010	2011	2012	2013	2014
Non-exporters	24 959	25 561	24 868	27 256	22 992
Exporters	4 957	6 868	7 145	8 117	7 257
Total manufacturing firms	29 916	32 429	32 013	35 373	30 249

Descriptive statistics

The number of the manufacturing exports per destination



The value of the manufacturing exports per destination



Descriptive statistics

Number of employees, wages and wages per person (average for 2010-2014)

	Number of employees	Wages per person	Firm wages
Non-export			
Mean	19	201 976	2 116 382
Median	7	96 468	667 673
Exporters			
Mean	82	262 130	16 260 000
Median	20	144 725	2 771 373
- International			
Mean	137	324 834	31 340 000
median	28	164 132	4 294 574
- Africa_only			
Mean	47	233 918	6 660 803
median	18	149 071	2 588 920

Source: Authors' own calculations

Brief literature overview

- Exporters are, on average, larger than non-exporting firms in terms of number of employees (Brambilla et al., 2015)
- Exporters contribute to employment creation (Rankin, 2005)
- Exporters demand certain types of jobs (Bas, 2012)
  - Blue collar versus white collar jobs
- Exporters pay higher wages than non-exporters (Bernard and Jensen, 1997; Verhoogen, 2008)

Export premia

$$\ln(X)_i = \alpha + \beta_1 Exporter_i + \beta_2\, No.dest_i + \beta_3 No.prod_i + \beta_4 lkl_i + \beta_5\, Industry_i + \beta_6 year_i + u_i$$

Where:

$\boldsymbol{X_i}$ – firm characteristics (number of employees, wages per person, wages)

$\boldsymbol{Exporter_i}$ – dummy variable of export status (exporter=1 and non-exporter=0)

$\boldsymbol{No.dest_i}$ –Number of destinations exported to by firm (this is 0 if the firm does not export)

$\boldsymbol{No.prod_i}$ – Number of products exported by firm

$\boldsymbol{lkl_i}$ – ln capital per worker

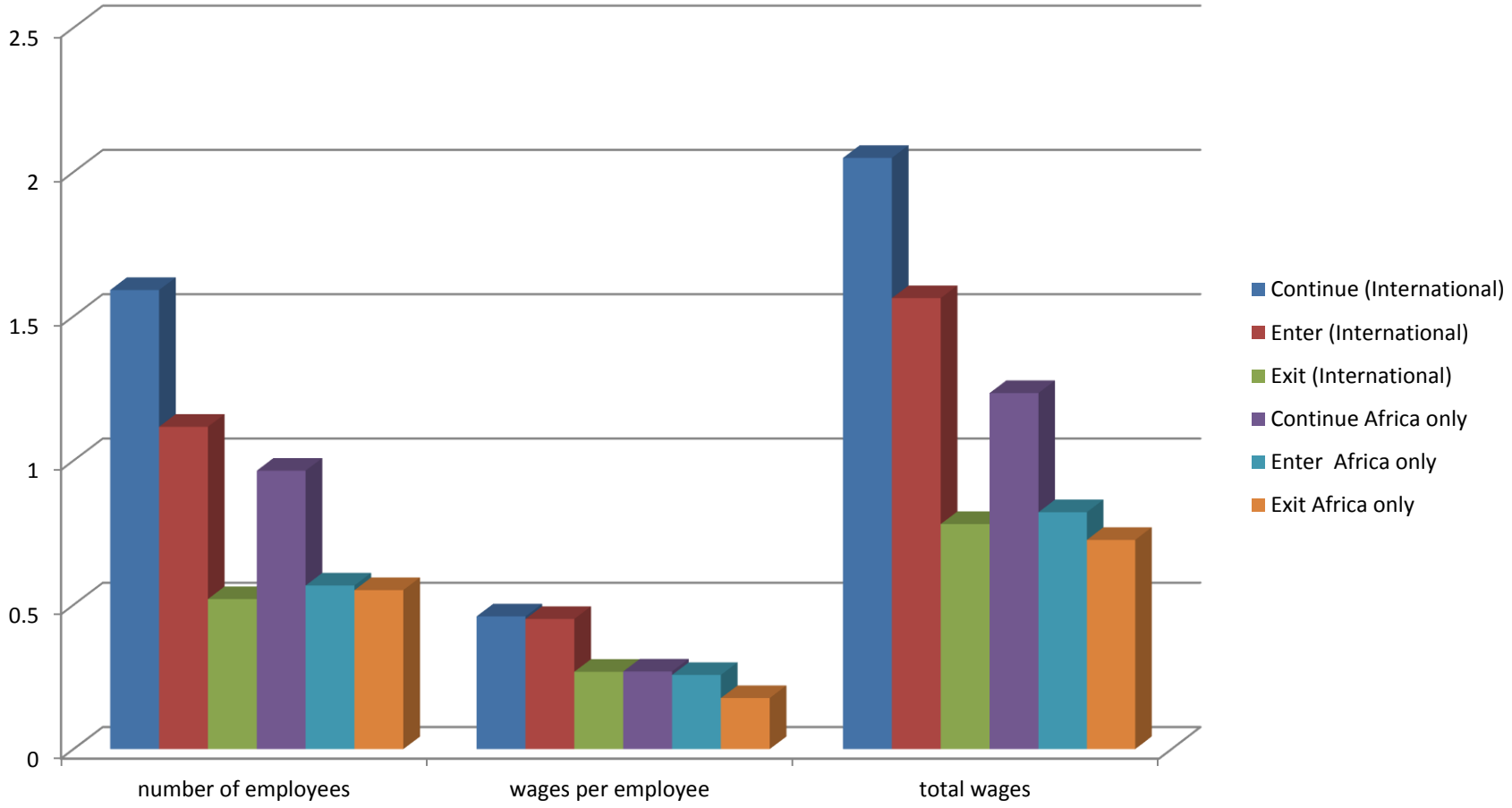
$\boldsymbol{Industry_i}$ – control dummy (4 digit ISIC classification) to account for heterogeneity

$\boldsymbol{year_i}$ – control dummy for the years 2010 to 2014

$\boldsymbol{\beta_i}$ – export premia

$\boldsymbol{\mu_{it}}$ – Error term

Labour demand and wages: non-exporters versus exporters (within and outside Africa)



Note: Premium relative to non-exporters
Source: Authors' own calculations

Employment growth

$$\Delta E_i = \alpha + \beta_1 Exporter_i + \beta_2 \Delta \text{lkl}_i + \beta_3 No.dest_i + \beta_4 No.prod_i + \beta_5 Industry_i + u_i$$

Where:

$\Delta \boldsymbol{E_i}$– Growth in employment (number of employees, above and below age 30, above and below R6500pm)

$\boldsymbol{Exporter_i}$– dummy variable of export status (Africa, International, Continue, Enter, Exit)

$\Delta \boldsymbol{lkl}$ – growth in capital

$\boldsymbol{No.dest_i}$ – control dummy (number of destinations exported to by firm)

$\boldsymbol{No.prod_i}$ – control dummy (number of products exported by firm)

$\boldsymbol{Industry_i}$ – control dummy (4 digit ISIC classification)

$\boldsymbol{\mu_{it}}$ – Error term

$\boldsymbol{_i}$ – the sample period of 2010 to 2013

Employment growth: Exporters within and outside Africa

	Δ No of employees(1)	**Δ below age of 30 (2)**	**Δ above age of 30 (3)**	**Δ below R6500 pm (4)**	**Δ above R6500 pm (5)**
Export dummy	0.212***	0.157***	0.251***	0.0583*	0.408***
	(0.0301)	(0.0288)	(0.0297)	(0.0322)	(0.0265)
Africa only	0.069***	0.041***	0.086***	0.0143	0.212***
	(0.0312)	(0.0298)	(0.0308)	(0.0334)	(0.0275)
Δ lkl	0.150***	0.102***	0.143***	0.136***	0.0958***
	(0.00111)	(0.00106)	(0.00109)	(0.00119)	(0.000974)
No. dest &prod control	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes
Observations	31 961	31 961	31 961	31 961	31 961

Source: Authors' own calculations

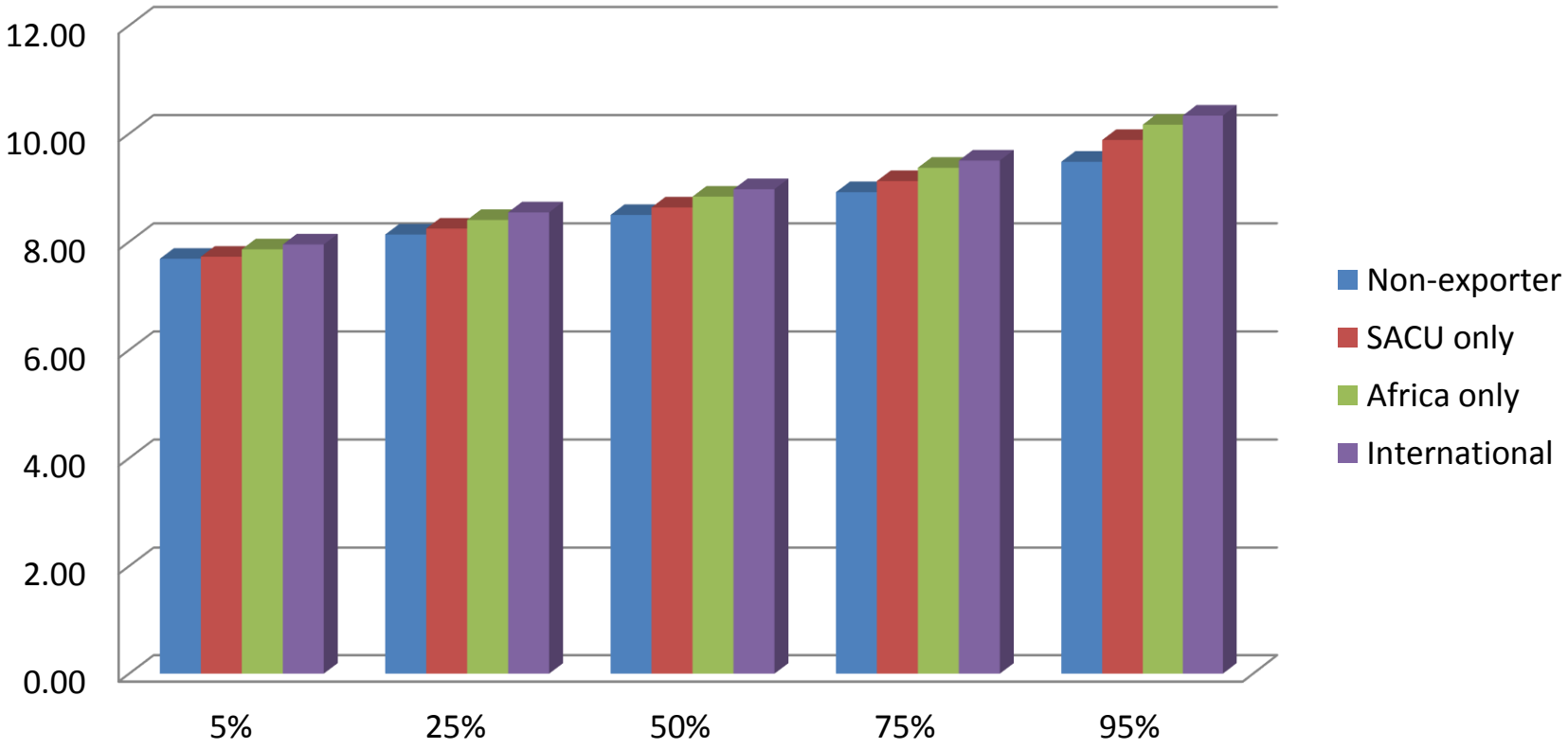
Notes: ***p<0.01 **p<0.05 *p<0.1

(Is significant at the 1% level, 5% level and 10% level respectively)

Wage distribution and inequality

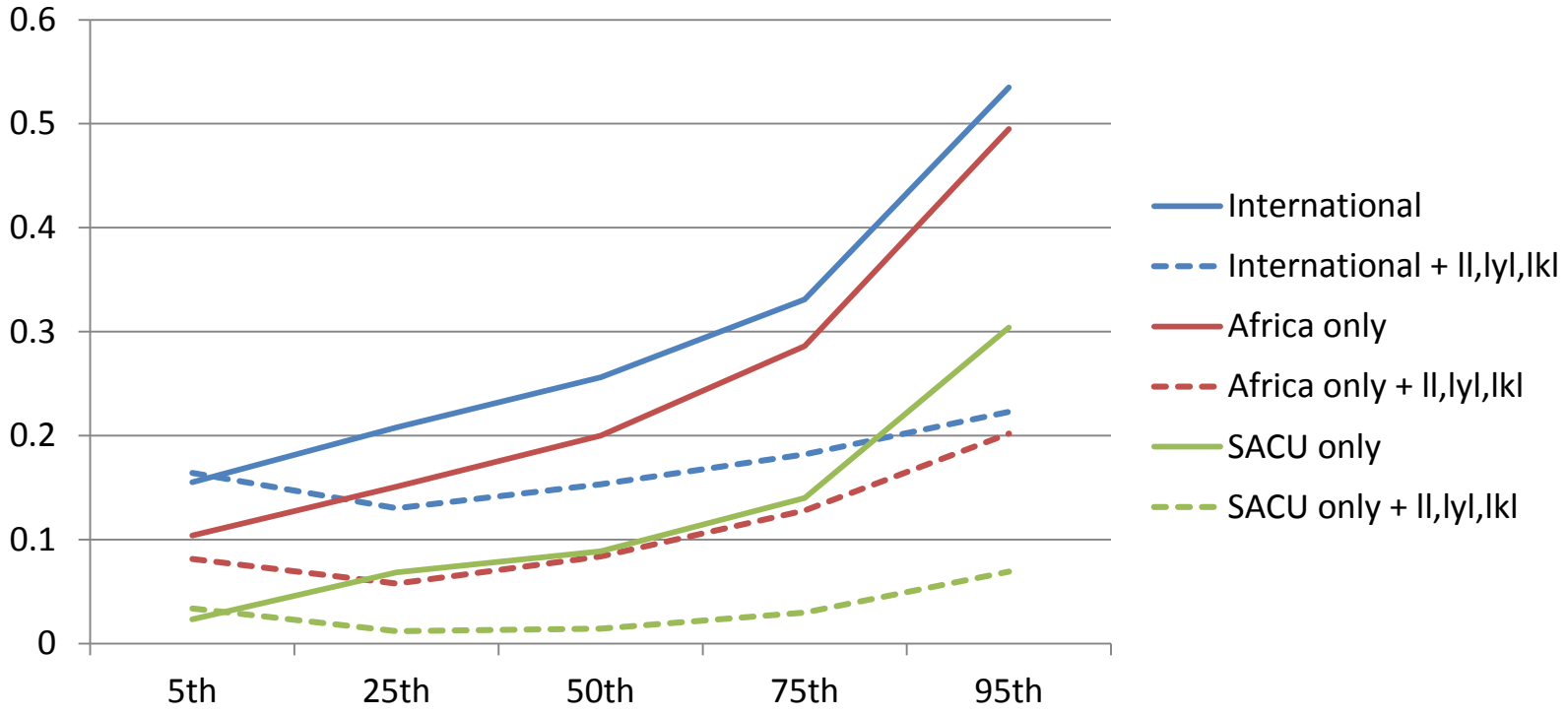
- International literature
  - Frías, Kaplan and Verhoogen (2012) – Mexico
    - exporters versus non-exporters
    - Between the top and bottom quartile the wage effects of exporting increase with earnings
  - Bernini, Guillou and Treibich (2015) – France
    - wage premium throughout the distribution and that the magnitude of the distribution increases towards the top end of the wage distribution

Wage distribution: non-exporters versus exporters (within and outside Africa)



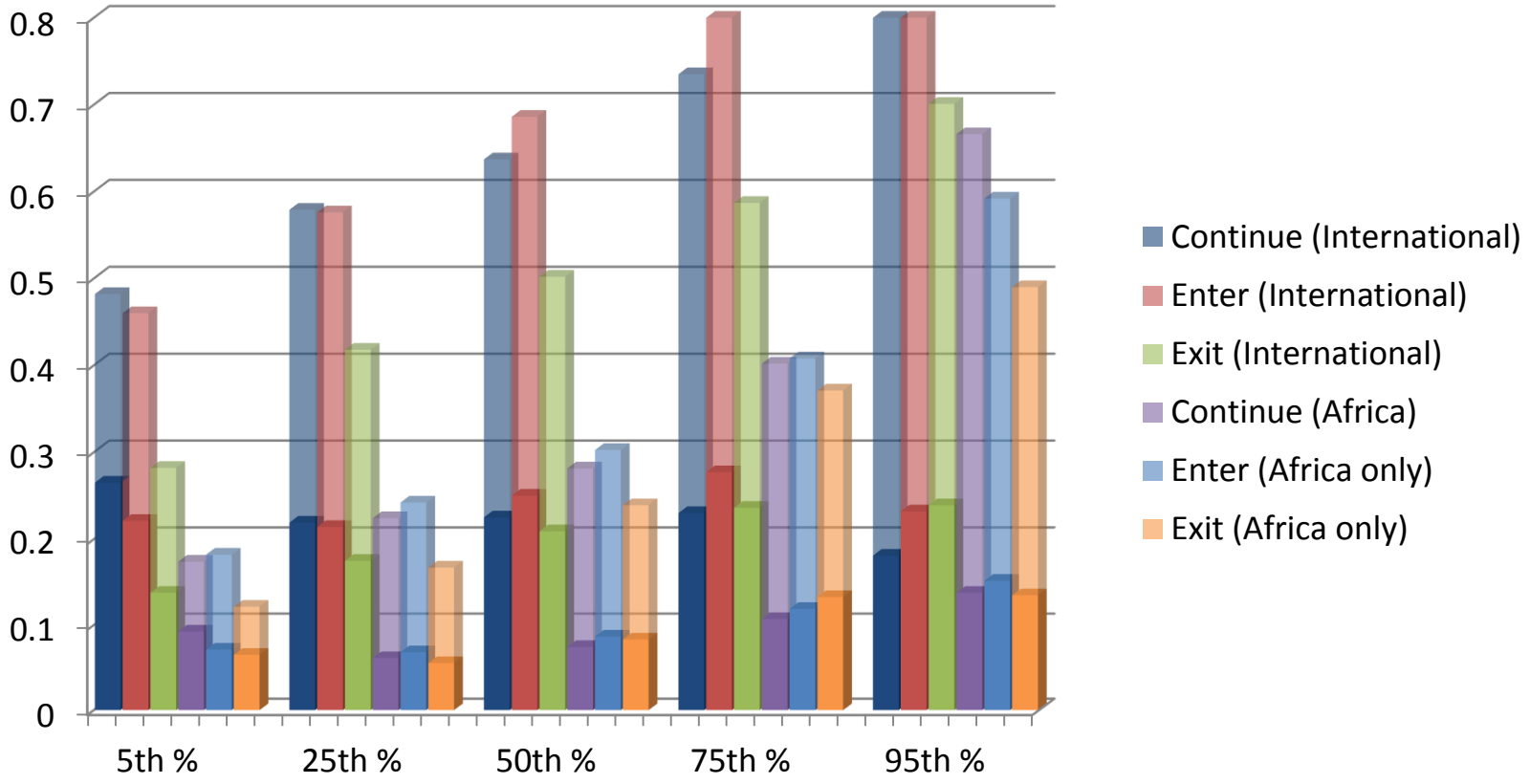
Source: Authors' own calculations

Wage distribution: Exporters within and outside Africa and SACU, with different controls



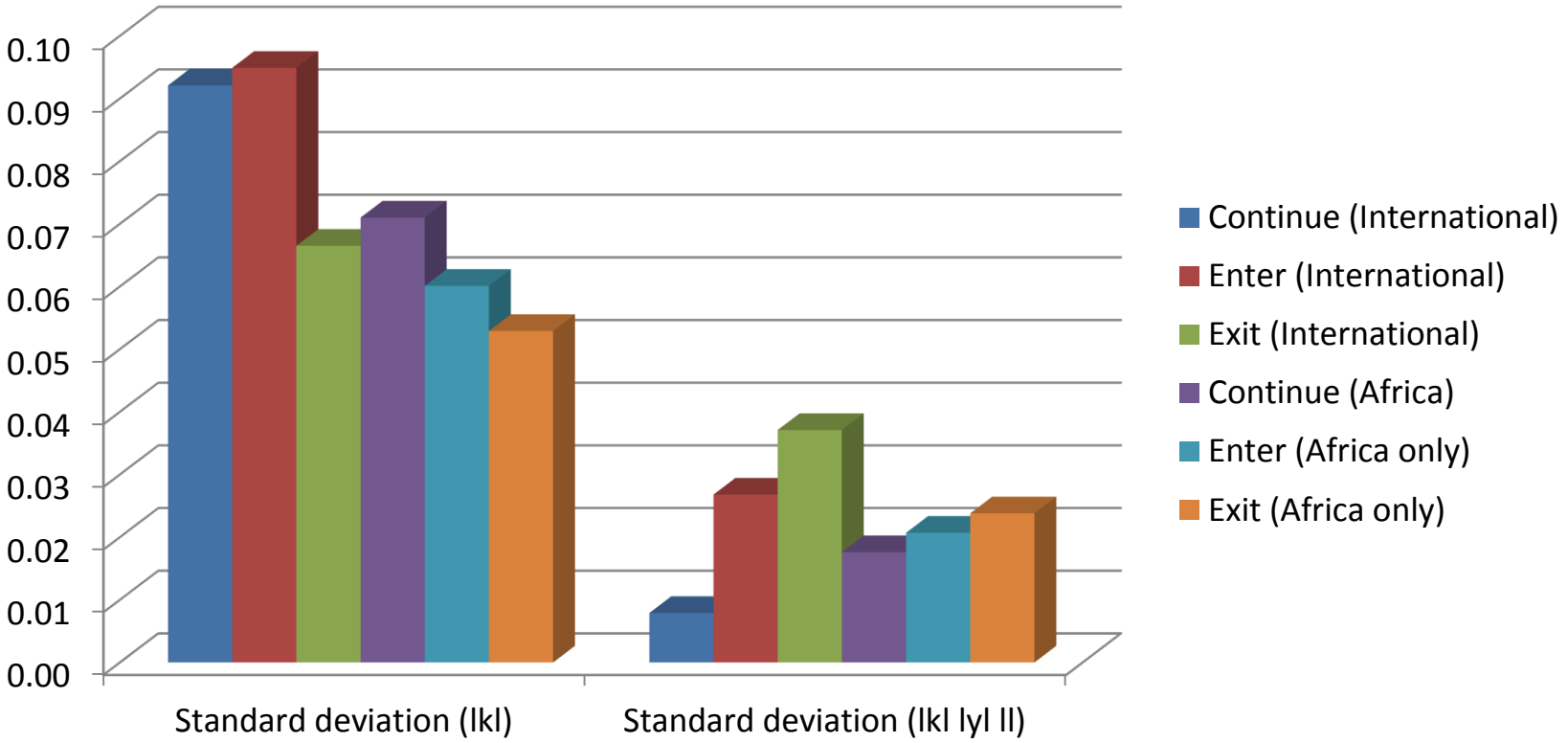
Note: Premium relative to non-exporters
Source: Authors' own calculation

Wage distribution: Exporter dynamics within and outside Africa



Premium relative to non-exporters- The lower end of each bar is the premium controlling for firm characteristics, the upper end is the additional premium without controlling.
Source: Authors' own calculations

Wage inequality in terms of exporter status



Note: Premium relative to non-exporters
Source: Authors' own calculations

Wage inequality: exporter behaviour

$$\ln(X)_i = \alpha + \beta_1 Exporter_i + \beta_2\, No.dest_i + \beta_3 No.prod_i + \beta_4\, Industry_i + \beta_5\, firm_i + \beta_6 year_i + \beta_7 control_i + u_i$$

Where:

$\boldsymbol{X_i}$ – within firm wage distribution (5th percentile, 25th percentile, 75th percentile, 95th percentile)

$\boldsymbol{Exporter_i}$– dummy variable of export status (SACU, Africa, International)

$\boldsymbol{No.dest_i}$– control dummy (number of destinations exported to by firm)

$\boldsymbol{No.prod_i}$– control dummy (number of products exported by firm)

$\boldsymbol{Industry_i}$– control dummy (4 digit ISIC classification) to account for heterogeneity

$\boldsymbol{firm_i}$– control for firm characteristics (ln capital per worker, ln number of employees, ln output per worker)

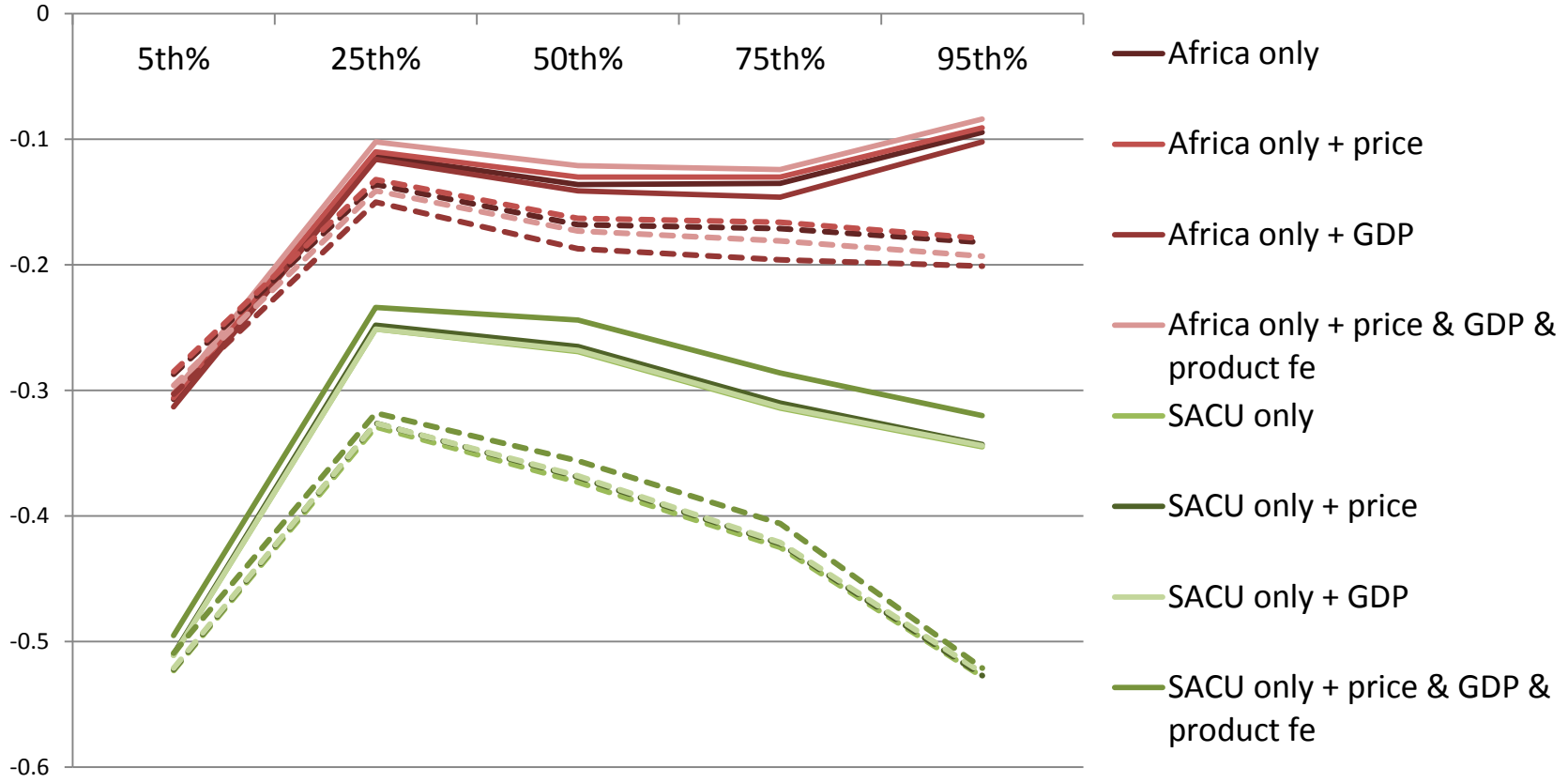
$\boldsymbol{year_i}$– control dummy for the years 2010 to 2014

$\boldsymbol{control_i}$– control for HS6 product price/ GDP per capita/ adding product fixed effects

$\boldsymbol{\beta_i}$ – export premia

$\boldsymbol{\mu_{it}}$- Error term

Wage distribution (inequality): Within and outside Africa



Note: Relative to International firms - The dotted lines are the premium controlling for firm characteristics, the solid lines are without controlling.
Source: Authors' own calculations

Conclusion

- South African manufacturing exporters employ more workers and pay higher wages than non-exporters.
- Moreover, exporters tend to grow employment of more experienced (older), better paid workers.
- Within firm distribution of wages
  - An export premium exists across the wage distribution,
    - wide dispersion of wages within exporters (particularly international exporters)
  - Source of inequality?
    - inequality within exporters is not driven by exporting but rather by characteristics associated with the types of firms which participate in the export market.