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Regional economic communities and labour market outcomes: The case of Africa

M.I. Okumu
School of Economics, Makerere University, Kampala, Uganda
Email: okumuim@gmail.com

J. Sseruyange
School of Economics, Makerere University, Kampala, Uganda
Email: johnsseruyange@gmail.com

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Abstract

We examine the differences in employment and wage outcomes among firms from countries with membership in at least two Regional Economic Communities (RECs) in comparison to firms from countries with membership in one REC. We use a pooled OLS estimation strategy on the World Bank Enterprise Survey dataset of manufacturing firms in Africa. The results indicate that firms from countries with membership in at least two RECs are associated with higher wages and lower employment growth in comparison to firms from countries with membership in one REC. Further, firms from countries with membership in Common Market for Eastern and Southern Africa (COMESA) and Economic Community of West African States (ECOWAS) are associated with an increase in both wages and employment growth. With the recent ratification of the African Continental Free Trade Area (AfCFTA), our results show that AfCFTA should draw key facets of COMESA and ECOWAS in order to induce an increase in both wages and employment growth in Africa.

1. Introduction

The signing of the African Continental Free Trade Area (AfCFTA) is a dream come true for Africa's founding fathers, who were willing to delay the independence of their own countries in the aspiration of integrated regional economies (Kayizzi-Mugerwa et al., 2014). Indeed, regional economic communities (RECs) are a common phenomenon in Africa with varying levels of integration ranging from free trade areas to monetary unions with some overlapping. The East African Community (EAC), Central African Economic and Monetary Community of Central Africa (CEMAC), Southern African Development Community (SADC), Common Market for Eastern and Southern Africa (COMESA), Southern African Customs Union (SACU), and Economic Community of West African States (ECOWAS) are good examples for RECs in Africa. RECs in Africa are premised on their ability to affect economic growth and labour market outcomes (Anyanwu 2014) and trade (Makochekanwa 2014; Magee 2016). Although the literature demonstrates the potential benefits of RECs, no evidence exists that relates expanded Regional Economic Community (REC) membership to the labour market outcomes more so at firm level. Precisely, no evidence details the changes in labour market outcomes at the firm level when a country is a member of more than one REC. Existing studies demonstrate the relationship between labour market outcomes and REC but within a single REC. For example, using the Computable General Equilibrium (CGE) framework, Von Uexkull (2012) argues that among ECOWAS member states, regional exporters have a higher potential of creating jobs, employment and income security than exporters to outside ECOWAS. In a similar way, Carrère et al. (2020) demonstrate a potential 0.49 percent reduction in unemployment in Canada when trade restrictions were introduced in North American Free

Trade Agreement (NAFTA). However, the same study demonstrates a possible rise in unemployment to the tune of 48 percent and 2.4 percent in Mexico and the USA, respectively, when similar trade restrictions were introduced in the bloc. The latter result is supported by Villanueva (2017). Villanueva (2017) argues that NAFTA may not always guarantee positive and sustained employment creation. In relation to wages, Villanueva (2017) posits evidence of widened regional wages in Mexico after NAFTA, while Dhingra et al. (2017) argue that wages, especially in high-wage sectors, are likely to increase in comparison to wages in low-paid sectors on account of Brexit.

Much as the preceding literature demonstrates the effects of RECs, no evidence exists that relates expanded REC membership to labour market outcomes. More so at firm level. Therefore, the contribution of this study to the existing literature is mainly twofold: (1) we examine the impact of expanded REC membership on employment growth, and (2) we investigate whether wages increase with the expansion of REC membership. Specifically, we use the World Bank Enterprise Survey (ES) data for African manufacturing firms to compare the labour market outcomes (employment and wages) for countries with membership in one REC in comparison to countries with membership in at least two RECs.

This study builds on a number of studies. For example, Von Uexkull (2012) studied the effects of regional trade in the ECOWAS region on decent employment and found that both regional and global exporters to be larger, possess higher labour productivity, and pay higher wages compared to domestic firms. Moreover, Braakmann and Vogel (2011) examined the short-run employment effects of the 2004 European Union (EU) enlargement on firms located at Germany's Eastern border and found no short-run employment effects of the EU enlargement except for firms dealing in wholesale trade, retail trade, hotels and restaurants. The same study demonstrated strong employment among workers from Europe, higher wages for all workers except for skilled workers in consulting, research and other related activities. Similarly, Fertig (2003) provides a quantitative and qualitative assessment of the impact of economic integration on employment and labour market dynamics in EU member countries and candidate countries. The study analysed economy-wide data, but also focused on unveiling evidence that relates integration to different sectors, such as automotive and financial services of the economy. Although the study focused on the enlargement of the EU, which is only a part of the overall integration, the findings suggest that future integration processes lead to an increase of economy-wide employment in the accession countries and a small, if any, rise in employment in existing EU member countries. The study also indicates a further shift in the structure of employment towards a higher share of service sector employment.

Furthermore, Duda-Nyczak and Viegelahn (2016) used firm-level data from 47 African countries for a period of 2006 – 14 to study the relationship between firm's export and import status and the quantity and types of employment they offer and found both exporters and importers employing more full-time permanent workers compared to their respective non-trading counterparts within the region. The uniqueness of this article rests on six facts. First, it extends the analysis beyond understanding the impact of regional trade on employment, as examined in Braakmann and Vogel (2011), Duda-Nyczak and Viegelahn (2016), Fertig (2003) and Von Uexkull (2012) to understanding the impact of regional trade on wages. Second, it compares the impact of regional trade on employment and wages among firms from countries with membership in one REC in comparison to firms from countries with membership in at least two RECs. Precisely, it differs from Von Uexkull (2012), which examines the effects of regional trade in a single REC (ECOWAS) and compares wage and employment growth implications of manufacturing firms from countries with membership in one REC to manufacturing firms from countries with membership with at least two RECs. Third, although some studies demonstrate the impact of cross border trade on employment using the export intensity (Duda-Nyczak and Viegelahn (2016); Mouelhi (2007), import intensity of firms ((Duda-Nyczak and Viegelahn (2016) and trade openness on wages (Costinot and Rodriguez-Clare 2014), our study presents an alternative pathway of demonstrating the impact of economic integration to economic outcomes. More so, labour market outcomes. Specifically, following Isono (2011), who demonstrates that trade expansion among Asian countries results from economic integration, and Mashayekhi et al. (2012), who posit that the creation of African Union is in itself intended to expand trade, which is an important element of creating productive employment, we hypothesize that the more a country becomes a member in a number of RECs, the stronger it becomes in terms of market accessibility and as a result, its domestic firms expand creating more employment and an upward shift in wages. Finally, this paper also identifies which manufacturing subsectors are associated with employment growth under conditions of a country having membership in one REC in comparison to membership in at least two RECs.

The rest of the paper proceeds as follows: Section 2 reviews previous work and discusses in detail how our contribution is related to previous studies on economic communities and labour market outcomes. Section 3 describes the data and how the variables used in the analysis are measured. In section 4 we present the descriptive

statistics, while the theoretical foundations of our study are provided in section 5. Section 6 contains the estimation strategy, and our empirical results and associated discussion are presented in section 7. The final section offers the conclusions.

2. Literature review

In this section, we review the existing empirical evidence related to the impact of regional trade on labour market outcomes, in particular employment and wages. Most empirical studies that unfold the impact of regional trade on labour market outcomes provide a mix of conclusions. For example, Von Uexkull (2012) examines the impact of regional trade in ECOWAS region on job creation, labour productivity and employment. The study finds both regional and global exporters to be larger, have higher labour productivity potential, and to be paying higher wages when compared to domestic firms. The finding on higher labour productivity and paying of higher wages have great implications for regional exporters to create high quality within ECOWAS.

Putting that aside, Duda-Nyczak and Viegelahn (2016) used firm level data from 47 African countries to study the relationship between the firm's export and import status on the quantity and quality of employment offered by firms. The study found that importing firms employ more non-production workers compared to non-importing firms, while both exporters and importers demonstrated high employment provision for temporary workers. The potential of employment expansion is also demonstrated in Fertig (2003). Through a quantitative and qualitative assessment of the impact of economic integration on employment and labour market dynamics in EU member countries and candidate countries, Fertig finds a potential of deepened economic integration to lead to increased economy-wide employment in the accession countries and a small, if any, rise in employment in existing EU member countries.

Contrariwise, Boeri and Brücker (2000) demonstrate no likely effect of EU Eastern enlargement employment and wages. According to Boeri and Brücker, the Central and Eastern European countries are small, which means that trade and capital flows originating from these countries or directed to them are unlikely to affect commodity prices in the goods markets, and as a consequence, even employment and wages are bound to remain unchanged. Also, Carrère et al. (2020), using a theoretical trade model, show that globalization, of which regional integration is part, has the potential to lower unemployment when it simultaneously increases welfare. The study also reveals that labour reallocates towards sectors with lower-than-average labour market rigidities in the presence of globalization. Indeed, Carrère et al. (2020) show that in the long run, introducing trade restrictions in NAFTA has the potential of increasing unemployment in Mexico by 48% while welfare and real GDP per capita would reduce by 6.6% and 3.8%, respectively. However, the study further concludes that, to both Mexican and USA workers, unemployment hurts more in the short run than in the long run.

Using a quantitative model, Dhingra et al. (2017) show that by Britain leaving the EU and joining the European Free Trade Area, high-wage sectors are more likely to experience an increase in wages as compared to low-paid sectors. But, the overall impact of Brexit on wage inequality is likely to be large (Helpman, 2016).[1]

Besides, using a dataset containing 46 African countries, Anyanwu (2014) shows that RECs at a higher level have the potential to reduce youth unemployment irrespective of gender dimensions. While using the Input-Output analysis and inequality analysis to explore the distributive implications of trade among manufacturing workers in Mexico post-NAFTA, Villanueva (2017) found that the employment creation resulting from regional trade is not always positive and sustainable. The implication for this is that regional trade does not seem to be a stable source of jobs. Moreover, export-oriented manufacturing sectors employ approximately half the working population of the domestic manufacturing sector, albeit with the lowest wages (Villanueva 2017). Kayizzi-Mugerwa et al. (2014) also observe the potential of regional integration to cause a reduction in unemployment.

Mashayekhi et al. (2012) in their book chapter "Regional integration and employment effects in SADC. Policy priorities for international trade and jobs", published in 2012 maintain that the integration agenda of African continent is intended for trade expansion which is an important contributor to the creation of productive employment and poverty reduction. In more specificity, Mashayekhi et al. (2012) study the impact of the Southern African Development Community (SADC) to trade and employment. The study found trade between member countries to be relatively high and the integration showed a higher potential for employment creation as well as a possible upward shift in wages. Further, using the German manufacturing sector, Dauth et al. (2017) show that

[1] For details about firm heterogeneity and wage inequality, see Felbermayr et al. (2018)

Germany trading with Eastern Europe and China results in job losses among workers in import-competing sectors compared to other sectors. The effect is more pronounced among older than younger workers.

Overall, firm-level empirical literature indicates there is limited Africa-wide firm-level evidence relating labor market outcomes to regional trade. Existing studies, for example, Von Uexkull (2012), are limited to using the World Bank ES dataset for manufacturing and services to establish whether there are firm differences in the employment characteristics of domestic firms, regional exporters, and global exporters. This paper, however, seeks to explore wage and employment growth implications among firms from countries with membership in one REC in comparison to firms from countries with membership in at least two RECs.

3. Data and measurements

This study uses the ES data collected by the World Bank. These pooled data were collected between 2010 and 2017 containing information on formal non-agricultural firms sampled using stratified random sampling to ensure representativeness of the sample to each country's private sector. ES were administered to business owners and managers to capture information about firm specific and business environment characteristics. Note that ES for some countries could have been undertaken multiple times, however, in this paper we use the most recent survey datasets and restrict our sample to surveys administered between 2010 and 2017. Specifically, this study uses data from a sample of 6,192 manufacturing firms collected from 28 African countries (see Appendix 11).

The key variables in this study are employment growth, wages and RECs. Employment growth (EG) is measured at firm level following Davis and Haltiwanger (1995) with the rationale of having it bounded between -2 and 2[2] as given below:

$$EG_{ict} = {}^{(Employment_{ict} - Employment_{ict-3})}/_{(Employment_{ict} + Employment_{ict-3}/2)} \quad (1)$$

where i, c and t index refer to firm, country and time (fiscal year), respectively. The denominator in equation (1) is the average employment growth rate. $Employment_{ict}$ is the total number of permanent, full-time individuals who worked in firm i and country c at the end of the last fiscal year[3]. We focus on permanent, full-time workers while ignoring other forms of employment, for example, temporary workers, because of differences in the consistency of reporting of total employment (that is, the sum of permanent and temporary workers) across some countries (Aterido et al. 2011). $Employment_{ict-3}$ is the total number of permanent, full-time individuals who worked in firm i and country c at the end of three fiscal years ago. From the sample, the mean employment growth rate is 0.08. Wages constitute the total annual cost of labor, including wages, salaries, bonuses, and social security payments, divided by the number of full-time workers at the end of the previous fiscal year to get wages per worker as shown in equation (2):

$$Wages_{ic} = {}^{Total\ cost\ of\ labour_{ic}}/_{Employment_{ict-1}} \quad (2)$$

Given the likelihood of outliers in wage data, we employed the blocked adaptive computationally efficient outlier nominators used in Billor et al, (2000) at 15th percentile to exclude outliers[4]. To enable comparability of data across countries, all values in local currency units are converted to constant 2010 United States dollars. Note that all exchange rates are yearly averages obtained from the World Bank's World Development Indicators online databases.

[2] This bound has been in used in other studies like Aterido et al. (2011), Okumu et al 2019, Mawejje and Okumu (2018) for purposes of allowing employment to grow symmetrically around zero.

[3] During the survey, firms were asked about the number of permanent, full-time workers three complete fiscal years ago and Number of permanent, full-time workers last complete fiscal year. Note that permanent workers include all workers that are contracted for one or more fiscal years and/or have a guaranteed renewal of employment or an open-ended contract. These workers work a full shift, though this definition may vary by country and by industry. Permanent workers also include paid and unpaid workers (for example, family members if any). All workers and managers (including respondent) were also counted among permanent workers. In many countries, firms keep workers under temporary contracts that get renewed every year. In these instances, given that workers work a full year they are also included among permanent workers. In other countries, firms "outsource" their employment so that they hire a third party for its workers: in this case all these workers are accounted for as well as permanent workers, to the extent that they meet the criteria explained above.

[4] 107 firms are dropped because of having outliers.

RTA measures the number of REC membership(s) of the country in which firm i is situated. We hypothesize that the higher the number of REC memberships (e.g., to COMESA, SADC, CEMAC, SACU and EAC) a country has access to, the larger is its export market and, thus, the higher the likelihood of influencing labour market dynamics. Specifically, *RTA* is a dichotomous variable measuring REC=0 if a country has membership in one REC and REC=1 if a country has membership in at least two RECs.

4. Theoretical Framework

Following Kien and Heo (2009), we assume a Cobb Douglas production function of the form:

$$Y_{ic} = AK_{ic}^{\alpha}L_{ic}^{\beta} \qquad (3)$$

Where K is capital employed by the firm while L is the labour employed by a firm. The firm combines labour and capital to produce output Y. A is autonomous technology. α is the share of output that accrues to capital while β is the share of output that accrues to labour. Subscripts i and c indicate for firm i in country$c$. Assuming the firm is profit maximizing such that the marginal product of labour is equal to the wage (ω) and is given by:

$$\omega_i = \frac{\beta AK_{ic}^{\alpha}}{L_{ic}^{1-\beta}} \qquad (4)$$

While marginal product of capital (κ) is given by:

$$\kappa_i = \frac{\alpha AL_{ic}^{\beta}}{K_{ic}^{1-\alpha}} \qquad (5)$$

Solving the system of equations simultaneously to get rid of K in equation (1), the firm's output can be expressed as;

$$Y_{ic} = A\left[\frac{\alpha\omega_i}{\beta\kappa_i}\right]^{\alpha} L_{ic}^{\alpha+\beta} \qquad (6)$$

Log linearization of equation [6] gives us a firm's demand for labour of the form:

$$lnL_{ic} = \gamma_0 + \gamma_1 ln\left[\frac{\omega_i}{\kappa_i}\right] + \gamma_2 lnY_{ic} + \mu_{ic} \quad (7)$$

where $\gamma_0 = -\left(\frac{lnA+\alpha ln\alpha-\alpha ln\beta}{\alpha+\beta}\right)$, $\gamma_1 = -\frac{\alpha}{\alpha+\beta}$, $\gamma_2 = \frac{1}{\alpha+\beta}$ and μ_{ic} is the error term. Because of trade liberalisation, through RECs, export firms may be overwhelmed by the increased market available for their goods, which may induce more job opportunities for purposes of increasing production to suit increased demand. For importing firms, RECs may result in lower costs of intermediate goods, translating into more importation of those goods, which enhances labour demand as a co-factor of production. As such, equation (7) can be re-written as:

$$lnL_{ic} = \beta_0 + \beta_1 ln\left[\frac{\omega_i}{\kappa_i}\right] + \beta_2 lnY_{ic} + \beta_3 RTA_{ic} + \mu_{ic} \quad (8)$$

Furthermore, from equation (4), the wage equation can be expressed as

$$\omega_i = \frac{\gamma Y_{ic}}{L_{ic}} \qquad (9)$$

Where the ratio Y_{ic}/L_{ic} indicates labour productivity to suggest that wages are an increasing function of labour productivity (LP). Like in Mawejje and Okumu (2018), wages in this framework equally depend on firm characteristics, worker characteristics and business environment characteristics. RTA_{ic} is a dummy taking a value of 1 when firm i in country c has access to at least two RECs and 0 otherwise.

5. Estimation strategy

Since we have a pooled cross-sectional dataset with its corresponding data limitations, we proxy labour demand and Output using employment growth (EG) and productivity growth $(Output)$. Therefore equation (8) is estimated as:

$$EG_{ic} = \beta_0 + \beta_1 RTA_{ic} + \beta_2 Output_{ic} + \beta_3 \chi_{ic} + \beta_4 \psi_c + \mu_{ic} \qquad (10)$$

Where β_0 is a constant term. RTA_{ic} is a binary measuring '0' if a firm is located in country with membership in one REC and '1' if a firm is located in country with membership in at least two RECs. In the EG model, β_1 measures the change in the employment growth when a firm is located in a country with membership in one REC compared to a firm located in a country with membership in at least two RECs. For $\beta_1 > 0$ implies that membership in at least two RECs has the potential to enhance employment growth. χ_{ic} are control variables, ψ_c are country fixed effects and μ_{ic} is the error term.

To capture the differences in wages among firms located in countries with membership in at least two RECs in comparison to firms located in countries with membership in one REC, we estimate the following model:

$$LWages_{ic} = \sigma_0 + \sigma_1 RTA_{ic} + \sigma_2 Ouput_{ic} + \sigma_3 \chi_{ic} + \sigma_4 \psi_c + \varepsilon_{ic} \qquad (11)$$

Where $LWages$ is the log of wages per worker such that σ_1 in Equation (11) measures how wages per worker change when a firm located in a country with membership in one REC is compared to a firm located in a country with membership in at least two RECs. $\sigma_1 > 0$ implies that membership in at least two RECs has the potential to enhance wages. ε_{ic} is the error term, while other variables take similar definitions like in model 10. In both empirical models, the error terms are assumed to be independently and identically distributed. Both Equations (10) and (11) are estimated with robust standard errors that are heteroskedasticity and autocorrelation consistent.

Estimating the relationship between labour market dynamics and RECs is likely to be undermined by endogeneity concerns partly arising from labour market dynamics and RECs being jointly determined. This is because labour market dynamics affect trade policy just like factors affecting trade policy are likely to affect labour market dynamics (Hoeckman and Winters 2007). However, the creation of a treatment group for our RTA variable and a reference group makes our study take on a quasi-experimental design, which is strong enough to solve the directionality problem that could cause endogeneity threats. Moreover, even though quasi-experimental designs lack random assignment of subjects to treatment arms, they are credible as Randomised Control Trials (Shadish et al., 2002) and can be relied on to solve endogeneity concerns.

The control variables are based on both firm and business environment characteristics. Firm characteristics include *Exporter*, a dummy variable capturing firms whose products are exported directly. Certification is a dummy variable equal to '1' if a firm's product has an international accreditation. *Skill* is the proportion of workers who are high school graduates. Firm size is a categorical variable that takes a value '1' if a firm employs less than 20 workers (Small), '2' if a firm employs between 20 and 99 workers (Medium) and '3' if a firm employs at least 100 workers (Large). The average age of firms in complete years is 20, with a median of 16 in the estimate. However, we consider the log of firm age. *Experience* captures the number of years of experience that a top manager has in his sector of work. *Female Workers* captures the proportion of female workers in the workforce. *Supervision* indicates the proportion of non-production workers (for example, managers and administrators) in the total workforce. The business environment includes *Electricity*, which is defined as the proportion of annual sales lost due to electricity outages. *Bribe* is defined as the proportion of a firm sales that are paid to bureaucrats to access public services. *Credit* is a dummy variable that takes a value of 1 if a firm has a credit, 0 otherwise.

6. Estimation results and discussion

Below, we present our main results, which demonstrate the differences in employment and wage outcomes among firms from countries with membership in at least two RECs compared to firms from countries with membership in one REC[1]. The results indicate that RECs have implications on labour market outcomes (Table 2). Indeed, wages

[1] A summary of the descriptive statistics is presented in Appendix 1.

and employment growth are likely to increase and decrease respectively among firms located in a country with membership in more than one REC.

Specifically, wages are likely to increase by 194 percent when a country has membership in at least two RECs compared to membership in one REC. Employment growth on the other hand is likely to decrease by 19.8

percent under a similar integration regime. This suggests that wages increase while employment growth decreases the more a country integrates in various RECs. Our result on wages is consistent with Von Uexkull (2012), who found both regional and global exporters in ECOWAS to be larger and paying higher wages when compared to domestic firms, while the later result on employment growth is consistent with Cirera et al. (2013) which show that employment growth is inversely related with trade openness in developing countries. Among developed economies studies, this finding is similar to Dauth et al. (2017) which show that Germany trading with Eastern Europe and China caused job losses among workers in import-competing sectors. The inverse relationship between employment and membership in at least two RECs in comparison to membership in one REC could be attributed to the productivity displacement effect (Greenaway et al. 1999). This is because most firms opt to increase productivity at the expense of profits, thereby inducing the inverse relationship between trade liberalization and employment growth (Curie and Harrison 1997).

Following Mouelhi (2007), we disaggregate the firms across exporting and non-exporting firms. Results in Appendix 2 indicate that among non-exporting firms only, firms from countries with membership in at least two RECs are likely to pay higher wages, albeit reducing employment growth. For non-exporting firms located in a country with membership in at least two RECs implies increased competition for manufactured goods from exporting firms in countries with membership in similar RECs. This implies an increased likelihood of the non-exporting firm downsizing and, thus, a reduction in employment growth. This is partly consistent with results in Table 2, which indicate that exporting firms are likely to pay lower wages than non-exporting firms on account of remaining competitive. Among exporting firms only, Appendix 3 indicates that both wages and employment growth are neutral to trade liberalization. This suggests that irrespective of whether firms are from countries with membership in one or at least two RECs, wages and employment growth do not change among exporting firms. Besides, our results also contradict Were and Kayizzi-Mugerwa (2009), who argued that wages among exporting and non-exporting firms are not any different decades after trade liberalization. However, using RECs as a proxy for trade liberalization, we show that wages are more likely to increase among non-exporting firms than exporting firms at the cost of employment growth.

Table 2: RECs and labour market outcomes

	(1) Wages	(2) Wages	(3) Wages	(4) EG	(5) EG	(6) EG
RTA	2.344***	2.368***	1.645***	-0.160**	-0.248***	-0.312***
	(0.337)	(0.341)	(0.409)	(0.066)	(0.072)	(0.080)
Output		-0.019	-0.021		0.116***	0.118***
		(0.037)	(0.039)		(0.008)	(0.008)
Exporter			-0.207***			-0.014
			(0.077)			(0.016)
Supervision			0.460***			0.040
			(0.164)			(0.037)
Female Workers			-0.271**			-0.107***
			(0.130)			(0.026)
Gender Manager			-0.031			0.021
			(0.071)			(0.019)
Experience			0.009			-0.0001
			(0.040)			(0.009)
Skill			0.227***			-0.029***
			(0.026)			(0.006)
Firm size (base, small)						
Medium			-0.084			0.088***
			(0.063)			(0.014)
Large			0.080			0.128***
			(0.082)			(0.021)

Firm age			0.107***			-0.044***
			(0.032)			(0.008)
Certification			0.388***			-0.007
			(0.066)			(0.015)
Capital City			0.234***			-0.016
			(0.058)			(0.013)
Credit			0.216***			0.002
			(0.055)			(0.014)
Electricity			-0.077***			0.005
			(0.024)			(0.006)
Bribe			-0.017***			0.001
			(0.006)			(0.001)
Country Fixed Effects	YES	YES	YES	YES	YES	YES
Constant	4.696***	4.678***	4.056***	0.317***	0.426***	0.540***
	(0.314)	(0.316)	(0.411)	(0.062)	(0.067)	(0.071)
N	6171	6171	5484	6192	6192	5496
R^2	0.337	0.337	0.373	0.067	0.127	0.154
adj. R^2	0.334	0.334	0.369	0.063	0.123	0.148

Source: Authors' calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects

We also attempt to understand whether the relationship between RECs is sensitive to firm size; as such, we disaggregate the firms across sizes. As is evident from Appendices 4, 5 and 6, the results indicate that irrespective of firm size, firms from countries with membership in at least two RECs are more likely to pay higher wages than firms from countries with membership in one REC. However, among small firms only, employment growth is likely to reduce among firms from countries with membership in two RECs compared to firms from countries with membership in one REC. Otherwise among large and medium firms, the relationship is neutral. To suggest that there is no statistical difference between firms from countries with membership in two RECs and those from countries with one REC.

Furthermore, we also attempt to understand labour market outcomes across various manufacturing subsectors. Specifically, we create a categorical variable *Industry* which is equal to 1, 2, 3, 4 and 5 if a firm is in the garment, food, publication, fabrication and non-metal products subsectors, respectively. Note that those subsectors are chosen because each one of them has at least 500 observations in the sample.

The results in Appendix 9, Model 1, indicate that firms that engage in food, publishing, fabrication and non-metal products subsectors are more likely to pay higher wages than firms in the garment subsector. Upon interacting *RTA* and *Industry*, the results indicate that firms engaging in fabrication and publication and are also from countries with membership in at least two RECs pay higher wages than firms engaging in garments and are from countries with membership in at least two RECs. Workers in the fabrication subsector are the biggest beneficiaries of RECs because their wages increase by 3.2 percent when a person works for a fabricating firm located in a country with membership in at least two RECs compared to a worker in the garment firm from a country with membership in at least two RECs. However, before interacting the respective manufacturing subsectors with *RTA*, firms in the garment subsector create more jobs as compared to firms in the fabrication, non-metal and food subsectors (Appendix 9, Model 2).

Upon interacting the subsectors with *RTA*, firms in the food, fabrication and publication subsectors located in countries with membership in at least two RECs are associated with higher employment growth than firms in the garment subsector that are from countries with at least two RECs. This implies that competition due to membership in at least two RECs penalizes the garment subsector, which undermines employment growth.

Also, we created a categorical variable with the rationale of comparing labour market outcomes among firms in the garment, food, publication, fabrication and non-metal products subsectors in comparison to other manufacturing subsectors taken together. From Appendix 9, Model 3, it is evident that firms in the food subsector pay higher wages than firms from other subsectors, while firms in the garment subsector pay lower wages than firms from other subsectors. Even with location in a country with at least two RECs, firms in the garment subsector pay lower wages than firms from other subsectors and are from countries with at least two RECs. However, firms in the food subsector pay higher wages than firms from other subsectors, but this effect becomes insignificant when the food subsector is interacted with the measure of RTA.

With regard to employment growth, firms from the garment and publishing subsectors are associated with employment growth as opposed to firms from other subsectors (Appendix 9, Model 4). While employment growth is inversely related to firms from the food subsector in comparison to firms from other subsectors interacting with *RTA*, our results indicate that employment growth is negatively associated with firms in the garment subsector and

are located in a country with membership in at least two RECs in comparison to firms in other subsectors and are located in a country with membership in at least two RECs (Appendix 9, Model 4). The preceding results indicate that having membership in two RECs is a double tragedy to labour market outcomes in the garment subsector in comparison to firms from other subsectors. This is perhaps because competition associated with membership in two RECs undermines wages and employment growth among firms from countries with membership in at least two RECs in comparison to firms from other subsectors but are located in countries with membership in at least two RECs.

Furthermore, we disaggregate RECs across the actual trade arrangements; the results indicate that wages are likely to increase among firms from countries with membership in EAC, CEMAC, ECOWAS, COMESA and SACU. Wages are likely to decrease among firms from countries with membership in SADC. With regard to employment growth, the results indicate that employment growth is likely to decrease among firms from countries with membership in EAC, ECOWAS, COMESA, SACU and CEMAC. However, employment growth is likely to increase among firms from countries with membership in COMESA, SADC and ECOWAS. Our result contradicts Von Uexkull (2012), who found that trade liberalisation has the potential of creating jobs among firms from countries with membership in ECOWAS. However, Von Uexkull (2012) results are based on disaggregated data between exporters within ECOWAS and global exporters.

With regard to location characteristics, consistent with Gould (2007), Baum-Snow and Pavan (2011), Andersson et al. (2013) and Mawejje and Okumu (2018), our results indicate that wages are positively associated with firms located in the capital city (Table 2, Model 3). This implies that there is a wage premium associated with working in the capital city partly because cities tend to attract workers who are more educated and have relatively higher skills (Roca and Puga, 2016). However, firm location in the city has no significant effect on employment growth, although the relationship is positive (Table 2, Model 6). Our result is inconsistent with Hoogstra and van Dijk (2004), who argue that cities are typically characterized by accessibility, greater diversity of economic activities, and office sites, which should induce firm employment growth. Furthermore, cities are associated with larger populations, implying higher consumer density for a firm's goods, which implies a higher potential for firm employment growth (Hoogstra and van Dijk, 2004). In terms of firm characteristics, consistent with Heyman (2007), we find that wages are positively associated with firm age (Table 2, Model 3). Our results contradict Burton, Dahl, and Sorenson (2017), who found that wages are indifferent to firm age. However, the results are consistent with Malchow-Moller et al. (2011), Haltiwanger et al. (2013), Ayyagari et al. (2014), de Wit and de Kok (2014), Lawless (2014), Anyadike-Danes et al. (2015) and Adelino et al. (2017). We also find that employment growth is inversely related to firm age. This could be partly because older firms fail to recognize or exploit business opportunities that arise in their midst Chatterji (2009) as opposed to being ill-suited to take a gamble on new business opportunities identified by their employees (Adelino et al., 2017). Further, Lawless (2014) argues that irrespective of firm size, employment growth will be apparent for as long as a firm is young. Indeed, in the sub-sample of small, large and medium size firms, we find that employment growth is inversely associated with firm age (Appendices 4, 5 and 6, model 6). Therefore, the youngest firms are associated with employment growth irrespective of firm size.

Our result contradicts Ayyagari et al. (2014), who used a cross-country firm-level dataset of developing countries and found that employment growth is positively associated with small firms in comparison to medium and large firms. Our results also contradict Haltiwanger et al. (2013), who, while using data from the Census Bureau's Business Dynamics Statistics and Longitudinal Business Database from the USA, found that once firm age is controlled for, firm size has no systematic relationship with employment growth.

Also, there is evidence of wage premiums favoring male workers. Table 2, Model 3, indicates that the higher the proportion of full-time women production workers to total employment, the lower the wage, implying that there could be a wage ceiling for women even if they climb up the management ranks compared to their male counterparts. Indeed, using matched worker-firm data from Morroco, Nordman and Wolff (2009) found that the male wage premium is higher compared to women in the higher-up distribution, while at the bottom of the distribution, there is no difference between earnings across genders. Our result is consistent with Fafchamps et al. (2009), who, while using matched employer-employee manufacturing data from eleven African countries, found evidence of gender wage gaps partly attributed to women self-selecting into low-wage occupations and firms. Our result is also consistent with those of Mawejje and Okumu (2018), who found evidence of gender wage differences in Africa's manufacturing firms. With regard to employment growth, Table 2, Model 6, indicates that the higher the proportion of full-time women production workers to total employment, the lower the employment growth. Our result is consistent with Amoroso and Link (2018), who show that when the first owner of a firm is a woman, employment growth is lower compared to when the first owner is a man, and the relationship holds among low-technology manufacturing firms.

With regard to business environment indicators, our results indicate that a good business environment is paramount for firms to pay high wages. Indeed, the more losses firms experience as a result of electricity blackouts, the lower the wages. Similarly, the more firms pay out in terms of bribes, the lower the wages. These results are consistent with those of Mawejje and Okumu (2018). However, the relationship between the business environment and employment growth is insignificant. Finally, our results also show that wages are higher among firms that have a credit facility compared to their counterparts without a credit facility. However, the relationship between employment growth and access to credit is insignificant. Contrary to the notion that financing constraints play a significant role in the rates of new jobs, not to mention new firm creation (Adelino, Ma, and Robinson, 2017). Similarly, we find wages are increasing among firms that have certified products and a high proportion of high school graduates, though, these seem not to impact on employment growth. In assessing the sensitivity of the relationship between RECs and labour market outcomes to the presence of large countries such as Egypt and Nigeria, we conducted a robustness check by excluding 1,231 observations from Nigeria and 1,130 observations from Egypt. Our analysis, presented in Appendix 13, demonstrates that the primary findings remain consistent even after omitting these significant data points. This robustness underscores the validity of our results, suggesting that the observed effects of RECs are not disproportionately driven by the economic conditions or specific attributes of the largest countries in the dataset. These findings reinforce the broader applicability and reliability of our conclusions across a diverse range of countries within the studied RECs in Africa, thus contributing to a more nuanced understanding of regional economic integration and labour market outcomes.

7. Conclusion

This study sought to explore the labour market outcomes associated with RECs using a cross-country dataset of manufacturing firms in Africa. The results indicate that RECs have the potential to induce wage increments; however, they undermine employment growth. This suggests that RECs may not be the panacea for Africa's structural transformation through creating jobs in the manufacturing sector. However, they could have the potential to induce wage inequality, especially within the manufacturing subsectors that could benefit from RECs, especially among small and non-export-oriented firms. This also suggests that the relationship between the RECs and labour market outcomes is conditional upon the firm size, firm age and the manufacturing subsector. Specifically, our results suggest that firms from countries with membership in at least two RECs are likely to be associated with higher wages and undermined employment growth in comparison to firms from countries with membership in one REC. However, a subsector disaggregation shows that labour market outcomes are subsector-specific for countries with membership in at least two RECs in comparison to countries located in one REC. For example, in countries with membership in at least two RECs, wages in Fabrication and Publication firms are likely to be higher than in the Garments subsector. This implies that wage inequality is likely to intensify across manufacturing subsectors following a country's membership in at least two RECs. Furthermore, among firms from countries with membership in one REC, the results indicate that employment growth is higher in the Garment subsector in comparison to the Fabrication, Non-Metal and Food subsectors. However, among firms from countries with membership in at least two RECs, employment growth is likely to be higher in the Fabrication, Non-Metal and Food subsectors compared to the Garment subsector. This implies that competition arising from a country's membership in at least two RECs is likely to penalize firms in the Garment subsector in terms of employment growth. Overall, a country's membership in at least two RECs is a double tragedy for firms in the Garment subsector as it is associated with both lower wages and undermined employment growth in comparison to other subsectors. Our results also indicate that wages are likely to increase in countries with REC membership in EAC, CEMAC, ECOWAS, COMESA and SACU, while employment growth is likely to increase among countries with REC membership in COMESA, SADC, and ECOWAS. In terms of the implications of this study to AfCFTA, to induce positive labor market outcomes, especially with respect to wages, it is imperative that it borrows a leaf from EAC, CEMAC, ECOWAS, COMESA, and SACU. Also, for AfCFTA to induce employment growth, it is pertinent that it draws key facets from COMESA, SADC and ECOWAS. Overall, to mitigate the possibility of wages increasing while undermining employment growth or vice versa, AfCFTA ought to specifically draw key facets of COMESA and ECOWAS RECs since their existence is associated with an increase in both firm-level wages and employment growth.

Declarations

Availability of data and materials:

The data is available using this link https://www.enterprisesurveys.org/en/data

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Appendix

Appendix 1: Descriptive statistics

Variable	Number of observations	Mean	Minimum	Maximum
Employment Growth	6,192	0.09	-2	2
Wages per worker (USD)	6,171	2,369.279	0.000156	223697
Labour productivity per worker (t) USD	6,192	24,199.94	0.907	716,594.4
Labour productivity per worker (t-3) USD	6,192	34,374.21	9.80E-06	5,048,392
Productivity Growth	6,192	0.11	-2	2
Number of workers (t)	6,192	105.94	0	8500
Number of workers (t-3)	6,192	102.10	0	15000
Number of full-time employees	5,997	26.07	1	3500
COMESA (1=COMESA, 0=otherwise)	6,192	0.53	0	1
CEMAC (1=CEMAC, 0=otherwise)	6,192	0.03	0	1
EAC (1=EAC, 0=otherwise)	6,192	0.18	0	1
ECOWAS (1=ECOWAS, 0=otherwise)	6,192	0.34	0	1
SACU (1=SACU, 0=otherwise)	6,192	0.05	0	1
SADC (1=SADC, 0=otherwise)	6,192	0.23	0	1
RTA (1=at least two REC memberships, 0=otherwise)	6,192	0.34	0	1
Proportion of supervisors in the workforce	5,997	0.3	0.003	1
Proportion of female workers in the workforce	6,008	0.19	0	1
Gender of manager (1=manager is female, 0=otherwise)	6,167	0.11	0	1
Managerial experience (in complete years)	6,187	17.3	1	72
Proportion of high school graduates among workers	6,021	58.23	0	100
Import status (1=importer, 0=otherwise)	3,091	0.566	0	1
Export status (1=exporter, 0=otherwise)	6,192	0.22	0	1
Foreign Ownership (1=foreign owned, 0=otherwise)	6,131	0.12	0	1
Small firm (1=firm is small in size, 0=otherwise)	6,192	0.48	0	1
Medium firm (1=firm is medium in size, 0=otherwise)	6,192	0.32	0	1
Large firm (1=firm is large in size, 0=otherwise	6,192	0.20	0	1
Firm age (in complete years)	6,190	20	0	211
Firm has international certification (1=yes, 0=otherwise)	5,927	0.22	0	1
Firm is located in the capital city (1=yes, 0=otherwise)	6,192	0.37	0	1
Firm has a credit facility (1=yes, 0=otherwise)	5,985	0.22	0	1
Firm losses as % of annual sales lost due to electricity outages	6,192	10.46	0	100
Proportion of firm sales paid out to bureaucrats informally	6,121	1.56	0	100

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample.

Appendix 2: RECs and labour market outcomes among non-exporting firms only

	(1) Wages	(2) Wages	(3) Wages	(4) Employment Growth	(5) Employment Growth	(6) Employment Growth
RTA	2.444***	2.454***	1.974***	-0.216***	-0.301***	-0.321***
	(0.353)	(0.356)	(0.401)	(0.069)	(0.075)	(0.085)
Output		-0.008	-0.010		0.119***	0.118***
		(0.)	(0.038)		(0.009)	(0.009)
Supervision			0.464***			0.041
			(0.162)			(0.043)
Female workers			-0.328**			-0.095***
			(0.129)			(0.030)
Gender Manager			-0.031			0.009
			(0.074)			(0.021)
Experience			0.0463			0.001
			(0.040)			(0.010)
Skill			0.187***			-0.026***
			(0.026)			(0.007)
Firm size (base, small)						
Medium			-0.0005			0.077***
			(0.060)			(0.015)
Large			0.116			0.103***
			(0.083)			(0.025)
Firm age			0.057*			-0.046***
			(0.032)			(0.009)
Certification			0.433***			0.003
			(0.065)			(0.019)
Capital City			0.171***			-0.017
			(0.061)			(0.015)
Credit			0.146**			0.004
			(0.059)			(0.017)
Electricity			-0.073***			0.008
			(0.024)			(0.006)
Bribe			-0.002			0.001
			(0.004)			(0.001)
Country Fixed Effects	YES	YES	YES	YES	YES	YES
Constant	4.602***	4.594***	4.049***	0.336***	0.446***	0.528***
	(0.326)	(0.328)	(0.415)	(0.064)	(0.070)	(0.073)
N	4805	4805	4308	4817	4817	4316
R^2	0.334	0.334	0.368	0.078	0.137	0.158
adj. R^2	0.330	0.330	0.362	0.072	0.131	0.150

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects

Appendix 3: RECs and Labour market outcomes among exporting firms only

	(1) Wages	(2) Wages	(3) Wages	(4) Employment Growth	(5) Employment Growth	(6) Employment Growth
RTA	0.782	0.867	0.480	0.125	0.260	0.059
	(0.779)	(0.768)	(0.825)	(0.173)	(0.231)	(0.225)
Output		-0.059	-0.027		0.107***	0.117***
		(0.096)	(0.105)		(0.015)	(0.016)
Supervision			0.556			0.054
			(0.453)			(0.080)
Female workers			-0.020			-0.166***
			(0.412)			(0.059)
Gender Manager			-0.116			0.069
			(0.201)			(0.046)
Experience			-0.116			-0.004
			(0.098)			(0.019)
Skill			0.342***			-0.053***
			(0.088)			(0.018)
Firm size (base, small)						
Medium			-0.684***			0.154***
			(0.253)			(0.046)
Large			-0.596**			0.216***
			(0.280)			(0.051)
Firm age			0.200**			-0.042**
			(0.096)			(0.018)
Certification			0.296*			-0.030
			(0.165)			(0.028)
Capital City			0.389**			-0.009
			(0.161)			(0.028)
Credit			0.288**			-0.004
			(0.129)			(0.024)
Electricity			-0.0733			-0.007
			(0.0705)			(0.014)
Bribe			-0.0548***			0.001
			(0.0169)			(0.002)
Country Fixed Effects	YES	YES	YES	YES	YES	YES
Constant	6.228***	6.164***	6.073***	0.00578	0.123	0.531***
	(0.715)	(0.698)	(0.884)	(0.137)	(0.196)	(0.191)
N	1366	1366	1176	1375	1375	1180
R^2	0.368	0.369	0.427	0.053	0.112	0.165
adj. R^2	0.355	0.355	0.408	0.034	0.094	0.138

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects

Appendix 4: RECs and labour market outcomes among small firms only

	(1) Wages	(2) Wages	(3) Wages	(4) Employment Growth	(5) Employment Growth	(6) Employment Growth
RTA	1.244**	1.368**	0.561	-0.340***	-0.513***	-0.285***
	(0.542)	(0.555)	(0.591)	(0.098)	(0.101)	(0.103)
Output		-0.098**	-0.074		0.140***	0.142***
		(0.050)	(0.053)		(0.010)	(0.011)
Exporter			-0.315**			-0.041
			(0.145)			(0.030)
Supervision			0.486**			-0.012
			(0.211)			(0.056)
Female workers			-0.371**			-0.104***
			(0.185)			(0.036)
Gender Manager			-0.017			0.060**
			(0.100)			(0.027)
Experience			-0.027			-0.005
			(0.058)			(0.013)
Skill			0.207***			-0.026***
			(0.030)			(0.008)
Firm age			0.079*			-0.026**
			(0.045)			(0.012)
Certification			0.365***			0.028
			(0.120)			(0.036)
Capital City			0.179**			-0.022
			(0.082)			(0.020)
Credit			0.111			0.006
			(0.085)			(0.026)
Electricity			-0.077**			0.013*
			(0.030)			(0.008)
Bribe			-0.016**			0.001
			(0.007)			(0.001)
Country Fixed Effects	YES	YES	YES	YES	YES	YES
Constant	5.400***	5.302***	5.226***	0.369***	0.508***	0.679***
	(0.461)	(0.470)	(0.541)	(0.064)	(0.078)	(0.094)
N	2948	2948	2679	2961	2961	2689
R^2	0.333	0.335	0.360	0.067	0.148	0.164
adj. R^2	0.327	0.328	0.351	0.058	0.140	0.153

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects

Appendix 5: RECs and labour market outcomes among large firms only

	(1) Wages	(2) Wages	(3) Wages	(4) Employment Growth	(5) Employment Growth	(6) Employment Growth
RTA	3.533***	3.538***	3.596***	-0.338	-0.395*	-0.459
	(0.887)	(0.890)	(1.079)	(0.223)	(0.236)	(0.287)
Output		-0.005	-0.090		0.076***	0.083***
		(0.087)	(0.095)		(0.019)	(0.019)
Exporter			-0.132			0.037*
			(0.124)			(0.021)
Supervision			0.744**			0.052
			(0.297)			(0.067)
Female workers			0.007			-0.147*
			(0.309)			(0.076)
Gender Manager			0.062			-0.007
			(0.169)			(0.038)
Experience			0.025			0.007
			(0.075)			(0.017)
Skill			0.176**			-0.053**
			(0.089)			(0.025)
Firm age			0.030			-0.065***
			(0.066)			(0.015)
Certification			0.363***			-0.028
			(0.117)			(0.022)
Capital City			0.0001			0.059**
			(0.145)			(0.026)
Credit			0.132			-0.034
			(0.103)			(0.021)
Electricity			-0.138**			-0.007
			(0.061)			(0.013)
Bribe			0.009			0.001
			(0.010)			(0.004)
Country Fixed Effects	YES	YES	YES	YES	YES	YES
Constant	4.369***	4.366***	3.416***	0.482**	0.525**	0.658***
	(0.828)	(0.828)	(1.102)	(0.218)	(0.231)	(0.196)
N	1246	1246	1076	1252	1252	1076
R^2	0.259	0.259	0.264	0.150	0.177	0.239
adj. R^2	0.243	0.243	0.239	0.132	0.159	0.213

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects

Appendix 6: RECs and labour market outcomes among medium firms only

	(1) Wages	(2) Wages	(3) Wages	(4) Employment Growth	(5) Employment Growth	(6) Employment Growth
RTA	4.091***	3.947***	3.109***	-0.046	-0.139	-0.178
	(0.390)	(0.409)	(0.598)	(0.084)	(0.087)	(0.108)
Output		0.108	0.129*		0.102***	0.096***
		(0.068)	(0.074)		(0.013)	(0.015)
Exporter			-0.259*			0.004
			(0.142)			(0.029)
Supervision			-0.110			0.080
			(0.367)			(0.072)
Female workers			-0.159			-0.131**
			(0.263)			(0.054)
Gender Manager			-0.014			-0.046
			(0.141)			(0.034)
Experience			0.049			-0.012
			(0.073)			(0.015)
Skill			0.157**			-0.028*
			(0.071)			(0.016)
Firm age			0.181***			-0.058***
			(0.064)			(0.014)
Certification			0.448***			0.001
			(0.111)			(0.023)
Capital City			0.230**			-0.023
			(0.109)			(0.022)
Credit			0.285***			0.029
			(0.100)			(0.024)
Electricity			-0.050			-0.002
			(0.049)			(0.010)
Bribe			-0.025*			-0.001
			(0.015)			(0.001)
Country Fixed Effects	YES	YES	YES	YES	YES	YES
Constant	3.913***	4.031***	3.209***	0.136*	0.247***	0.545***
	(0.375)	(0.392)	(0.607)	(0.0702)	(0.0721)	(0.122)
N	1977	1977	1729	1979	1979	1731
R^2	0.386	0.388	0.417	0.103	0.149	0.179
adj. R^2	0.378	0.379	0.404	0.091	0.137	0.161

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects

Appendix 7: Wages and RECs

	(1) Wages	(2) Wages	(3) Wages	(4) Wages	(5) Wages	(6) Wages
COMESA	1.795***					
	(0.389)					
SADC		-0.151				
		(0.505)				
EAC			1.332***			
			(0.397)			
SACU				1.795***		
				(0.389)		
ECOWAS					2.130***	
					(0.428)	
CEMAC						1.422***
						(0.436)
Constant	4.056***	4.207***	4.056***	4.056***	4.056***	4.056***
	(0.411)	(0.364)	(0.411)	(0.411)	(0.411)	(0.411)
N	5484	5484	5484	5484	5484	5484
R^2	0.373	0.373	0.373	0.373	0.373	0.373
adj. R^2	0.369	0.369	0.369	0.369	0.369	0.369

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects4) Other control variables included but not reported include Output, Electricity, Bribery, Credit, Certification, Capital City, Supervision, Skills, Female Workers, Gender Manager, Experience, Firm Size, Firm Age, Exporter and Country Fixed Effects.

Appendix 8: Employment growth and RECs

	(1) Employment Growth	(2) Employment Growth	(3) Employment Growth	(4) Employment Growth	(5) Employment Growth	(6) Employment Growth
COMESA	-0.200**					
	(0.078)					
SADC		0.418***				
		(0.078)				
EAC			-0.249***			
			(0.071)			
SACU				-0.164**		
				(0.070)		
ECOWAS					-0.147	
					(0.093)	
CEMAC						-0.281***
						(0.069)
Constant	0.540***	0.123**	0.540***	0.540***	0.540***	0.540***
	(0.071)	(0.057)	(0.071)	(0.071)	(0.071)	(0.071)
N	5496	5496	5496	5496	5496	5496
R^2	0.154	0.154	0.154	0.154	0.154	0.154
adj. R^2	0.148	0.148	0.148	0.148	0.148	0.148

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects4) Other control variables included but not reported include Output, Electricity, Bribery, Credit, Certification, Capital City, Supervision, Skills, Female Workers, Gender Manager, Experience, Firm Size, Firm Age, Exporter and Country Fixed Effects

Appendix 9: RTAs and labour market outcomes controlling for industry

	(1) Wages	(2) Employment Growth	(3) Wages	(4) Employment Growth
RTA	1.991***	-0.311***	1.968***	-0.174**
	(0.382)	(0.089)	(0.403)	(0.074)
Industry (Base, Garment)				
Food	0.607***	-0.099***		
	(0.125)	(0.027)		
Publishing	0.429***	0.008		
	(0.158)	(0.039)		
Fabrication	0.404***	-0.096***		
	(0.154)	(0.034)		
Non-Metal products	0.510***	-0.066*		
	(0.153)	(0.034)		
RTA*Industry (Base, RTA*Garments)				
REC*Food	0.239	0.119***		
	(0.147)	(0.044)		
REC*Publishing	0.402**	0.119**		
	(0.186)	(0.060)		
REC*Fabrication	0.436**	0.151***		
	(0.183)	(0.058)		
REC* Non-Metal products	0.163	0.082		
	(0.205)	(0.056)		
Industry (Base, Other manufacturing)				
Garment			-0.405***	0.062**
			(0.116)	(0.026)
Food			0.155*	-0.035**
			(0.087)	(0.018)
Publishing			-0.004	0.069**
			(0.131)	(0.033)
Fabrication			-0.008	-0.029
			(0.116)	(0.024)
Non-Metal products			0.114	-0.001
			(0.120)	(0.025)
REC*Industry (Base, REC*Other manufacturing)				
REC*Garments			-0.276*	-0.088**
			(0.143)	(0.044)
REC*Food			-0.073	0.017
			(0.115)	(0.027)
REC*Publishing			0.113	0.017
			(0.164)	(0.048)
REC*Fabrication			0.110	0.049
			(0.157)	(0.045)
REC*Non-Metal products			-0.159	-0.014
			(0.183)	(0.045)
Constant	3.478***	0.663***	3.905***	0.577***
	(0.427)	(0.092)	(0.423)	(0.074)
N	3662	3666	5484	5496
R^2	0.384	0.166	0.380	0.159
adj. R^2	0.376	0.155	0.374	0.152

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects4) Other control variables included but not reported include Output, Electricity, Bribery, Credit, Certification, Capital City, Supervision, Skills, Female Workers, Gender Manager, Experience, Firm Size, Firm Age, Exporter and Country Fixed Effects

Appendix 10: Countries included in the study

Country	Year of survey	Frequency	Percent
Angola	2010	52	0.84
Benin	2016	61	0.99
Botswana	2010	73	1.18
Burundi	2014	59	0.95
CAR	2011	34	0.55
Chad	2009	49	0.79
Ivory Coast	2016	93	1.5
DRC	2013	176	2.84
Egypt	2016	1,122	18.12
Ethiopia	2015	347	5.6
Ghana	2013	330	5.33
Kenya	2013	359	5.8
Lesotho	2016	69	1.11
Malawi	2014	162	2.62
Mali	2016	84	1.36
Namibia	2014	106	1.71
Niger	2017	34	0.55
Nigeria	2014	1,199	19.36
Rwanda	2011	70	1.13
Senegal	2014	239	3.86
Sudan	2014	40	0.65
Tanzania	2013	307	4.96
Togo	2016	38	0.61
Uganda	2013	314	5.07
Zambia	2013	308	4.97
Zimbabwe	2011	318	5.14
Cameroon	2016	86	1.39
Eswatini	2016	63	1.02
Total		6,192	100

Appendix 11: Manufacturing subsectors used in the sample as defined by the 2-digitisic

2 Digit isic	Frequency	Percent
15	1,682	27.16
16	10	0.16
17	298	4.81
18	655	10.58
19	182	2.94
20	291	4.7
21	88	1.42
22	545	8.8
23	24	0.39
24	433	6.99
25	349	5.64
26	581	9.38
27	145	2.34
28	624	10.08
29	160	2.58
30	2	0.03
31	103	1.66
32	6	0.1
33	14	0.23
Total	6,192	100

Appendix 12: RECs used in the sample

Regional Trade Arrangement	Year of establishment	Member States	Level of integration
CEMAC	1999	Gabon, Cameroon, the Central African Republic, Chad, the Republic of the Congo and Equatorial Guinea.	Monetary Union and Free Trade Area
COMESA	1994	Ethiopia, Burundi, Uganda, Kenya, DRC, Egypt Zambia, Sudan, Swaziland, Malawi and Zimbabwe	Free Trade Area
EAC	2000	Burundi, Uganda, United Republic of Tanzania, South Sudan, Rwanda and Kenya	Common Market
ECOWAS	1975	Benin, Burkina Faso, Cape Verde, Ivory Coast, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal Sierra Leone and Togo	Customs Union
SADC	1992	Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles South Africa, Swaziland United Republic of Tanzania, Zambia and Zimbabwe	Free Trade Area
SACU	2002	Botswana, Lesotho, Namibia, Swaziland and South Africa	Customs Union

Appendix 13: RTAs and Labour Market Outcomes excluding Nigeria and Egypt

	(1) Wages	(2) Wages	(3) Wages	(4) EG	(5) EG	(6) EG
RTA	2.317***	2.376***	1.862***	-0.206***	-0.346***	-0.313***
	(0.321)	(0.321)	(0.384)	(0.0792)	(0.0821)	(0.0771)
Output		-0.0778***	-0.0767**		0.113***	0.113***
		(0.0302)	(0.0318)		(0.00860)	(0.00915)
Exporter			0.134*			0.0195
			(0.0746)			(0.0181)
Supervision			0.743***			0.0534
			(0.144)			(0.0404)
Female Workers			-0.324***			-0.0382
			(0.113)			(0.0308)
Gender Manager			-0.0254			-0.0275
			(0.0689)			(0.0191)
Experience			-0.000911			-0.00590
			(0.0341)			(0.00994)
Skill			0.158***			-0.0159**
			(0.0212)			(0.00647)
Firm size (small base)						
Medium			0.198***			0.0525***
			(0.0546)			(0.0149)
Large			0.320***			0.0451**
			(0.0871)			(0.0211)
Firm age			0.0934***			-0.0578***
			(0.0349)			(0.00934)
Certification			0.205***			0.0443**
			(0.0694)			(0.0181)
Capital City			0.281***			0.0162
			(0.0521)			(0.0140)
Credit			0.136**			0.00656
			(0.0545)			(0.0149)
Electricity			-0.0459*			0.00866
			(0.0236)			(0.00669)
Bribe			0.00252			-0.000367
			(0.00464)			(0.00103)
Country Fixed Effects	YES	YES	YES	YES	YES	YES
Constant	4.696***	4.623***	3.972***	0.317***	0.423***	0.522***
	(0.315)	(0.315)	(0.399)	(0.0618)	(0.0673)	(0.0691)
N	3855	3855	3336	3871	3871	3346
R^2	0.221	0.223	0.284	0.090	0.148	0.174
adj. R^2	0.216	0.218	0.276	0.084	0.142	0.165

Source: Author calculations based on data of ES (database), World Bank, Washington, DC, http://www.enterprisesurveys.org/. Note: Means and medians are unweighted country-level means and medians for all countries included in the sample. Note: 1) Standard errors in parentheses; 2) * p < 0.10, ** p < 0.05, *** p < 0.01; and 3) All models include country fixed effects.