

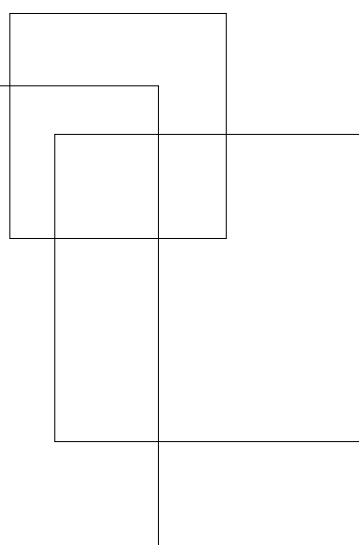


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Exporters, importers and employment: Firm-level evidence from Africa

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Abstract

This paper studies the relation between firms' export and import status, and the quantity and types of employment they offer, using firm-level data from 47 African countries in 2006-14. The paper also analyses how the quality of policies at the country-level relates to the difference between exporters and non-exporters, and between importers and non-importers. This paper shows that both exporters and importers employ on average more full-time permanent workers than their respective non-trading counterparts, even after controlling for a wide range of firm-level characteristics. This employment premium is larger in countries with a better quality of infrastructure. In addition, importers employ higher shares of non-production workers compared with non-importers. In addition, both exporters and importers are characterized by higher shares of female employment than their non-trading counterparts. Successful gender policies are positively associated with the female employment premium of trading firms. This paper also finds that there is a larger proportion of temporary workers in the workforce of exporters compared with non-exporters, but a better developed rural sector reduces this difference in the use of temporary manpower. The results presented in this paper suggest that the quality of policies has an impact on the extent to which trading firms are able to generate decent job opportunities in Africa.

Keywords: Africa, employment, firms, trade

JEL classification: F14, F15, F16

1 Introduction

International trade in general and regional integration in particular is viewed by a large number of policy makers in Africa as a powerful driver of economic development in the region. In the past decades, a large number of sub-regional and regional preferential trade agreements have been concluded and come into force. The Regional Economic Communities (RECs) have curtailed trade barriers between African countries and fostered free trade. The current trade policy focus in the region is on further connecting some of the already existing free trade areas in order to create larger internal markets, with the objective to form a customs union that would ultimately stretch over the whole continent.¹

While economic growth is a frequently encountered objective of trade policies, policy makers have the important task to make sure that economic growth is also sustainable and inclusive, in line with the *2030 Agenda for Sustainable Development*, which includes *decent jobs for all* as one of its central goals.² Especially for Africa, it is particularly pressing to create decent job opportunities, given that a working-age population needs to be absorbed, which is projected to rapidly increase by more than 300 million workers until 2030.³ More than 242 million African workers are currently estimated to live in moderate or extreme poverty, on less than USD 3.10 per day, corresponding to 58 per cent of the African workforce. This is one of the highest working poverty rates in the world. Also the vulnerable employment rate is high, standing at 62.6 per cent.⁴ Both working poverty and vulnerable employment are even higher for female workers, corresponding respectively to 62.8 per cent and 73.8 per cent.⁵

Given this background, the question arises which role exporting and importing firms, whose number is expected to increase when trade is liberalized, play for the creation of decent jobs. This paper aims to provide an answer to this question. The purpose of this paper is twofold. First, we investigate whether African exporters and importers are different from their non-trading counterparts, with respect to total employment, the share of non-production workers, the share of temporary workers, and the share of women in firms' workforce. Second, we identify country-level factors that are correlated with the size of the estimated cross-country differences between exporting and non-exporting, and between importing and non-importing firms, focusing on the quality of policies related to infrastructure, gender and rural development. With these two elements, the paper examines the role that trade can play for the quantity and quality of employment in different country contexts.

This paper uses data from the World Bank Enterprise Surveys, comprising 65 surveys conducted in 47 African countries in 2006-2014. This dataset is unique in the sense that it provides us with data that are comparable across all countries included, which allows us to study the relationship of exporting and importing with labour market outcomes by sector, REC and subregion, as well as its drivers. It is based on formally registered manufacturing firms with more than 5 employees. This does not appear to be

¹ In 2015, negotiations for the Tripartite Free Trade Area were concluded, which is a free trade agreement between the Common Market for Eastern and Southern Africa, the East African Community and the Southern Africa Development Community and consists of 27 African countries. In 2017, negotiations for the Continental Free Trade Area are expected to be finalized, which would form a single market for goods and services, encompassing all 54 members of the African Union. The establishment of a Continental Customs Union by 2022 and an African Economic Community by 2028 are further key benchmarks set up by the Abuja Treaty signed in 1991.

² The Sustainable Development Goal (SDG) 8 aims to *promote inclusive and sustainable economic growth, employment and decent work for all*.

³ This number is based on the population projections of the UN Population Division.

⁴ Vulnerable employment is composed of own-account workers and contributing family workers, which often do not have any social protection.

⁵ These employment statistics are based on recent ILO data and estimates for 2015.

a severe restriction for the given purpose of the analysis, as it is predominantly those firms that are engaged in trade.⁶

With the four employment indicators that are used in this paper, we are able to assess different aspects of the quantity and quality of employment in exporters and importers, compared with their non-trading counterparts. The first indicator, full-time permanent employment, is a pure indicator of the quantity of jobs. The second indicator, the share of non-production workers in full-time permanent employment, is an indicator of the type of jobs available within a firm. While production workers refer to plant and machine operators and assemblers, non-production workers typically comprise managers, professionals, administrative, advertising and sales workers. The third indicator, the share of temporary employees in total employment, is a proxy for the level of job security of workers, and hence an indicator of job quality. Indeed, temporary employment has been shown to be associated with an increased prevalence of physical as well as mental health issues among workers (Waenerlund et al., 2011; Virtanen et al., 2005; Benavides et al., 2000). Finally, the share of women in total full-time permanent employment, is an indicator for the inclusiveness of employment and it allows us to examine to what extent exporters and importers create employment opportunities for both sexes.

The links between trade and employment have been studied extensively in the empirical trade literature (Jansen et al., 2011). For Africa, however, empirical evidence at the firm-level on trade and employment is severely limited and our paper aims to provide a contribution in this respect. Van Biesebroeck (2005) and Brambilla et al. (2015) provide evidence for positive employment premia of exporting firms in African countries, but are based on a relatively small set of control variables. Moreover, their work neither includes any evidence on importing nor do they consider different types of employment. With regards to female employment, it has been documented only for the Kenyan manufacturing sector that exporters employ more female workers than non-exporters (Were, 2012). For the same country and sector, no strong evidence has been found for exporters to employ a different share of temporary workers than non-exporters (Were, 2011). In view of the scant literature on Africa, our paper's value added particularly lies in its consideration of different employment types and the addition of the import dimension as a variable of interest.

This paper finds that exporters and importers employ more full-time permanent workers than firms that respectively do not export or import, even after controlling for firm-level characteristics such as firm-level sales, firm age, electricity costs, capital stock, ownership status and sector-level fixed effects. The employment premium of exporting is estimated to be around three times as large as the employment premium of importing. A better quality of infrastructure is associated with a larger quantity of jobs created by exporting and importing firms, relative to their non-trading counterparts, suggesting that a good infrastructure is an important pre-condition for trading firms to grow and employ workers. In addition, we find that importers have a higher share of non-production workers in their workforce than non-importers, which might reflect a broader management structure needed to organize production processes that rely on imported inputs. However, the difference in the share of non-production workers between importer and non-importers is smaller, the better the infrastructure is in a country.

We also find that both exporters and importers tend to have a significantly higher share of women in their workforce than their non-trading counterparts. For importers, this difference is more pronounced in countries which score high on gender-related policies, suggesting that these policies are particularly beneficial for importers, compared with non-importers. Finally, we find that exporting firms have a

⁶ In a sample of almost 6000 informal sector firms in West Africa, only 1.0 per cent of firms reported to be exporter and 0.2 per cent of firms reported to be importer (Böhme and Thiele, 2014). There is generally a large overlap between informal sector firms and micro firms with less than 5 employees. For Zambia, for example, 70 per cent of informal sector firms are at the same time micro firms (Shah, 2012).

higher share of temporary workers in their workforce than non-exporters. A more developed rural sector decreases this difference between exporters and non-exporters. Importers have a higher share of temporary workers than non-importers, but only in countries in which the rural sector is not well developed. In the African context, it is often rural workers that are attracted by temporary employment opportunities in trading firms, usually located in urban areas. A better developed rural sector will less frequently oblige these workers to move into such jobs.

The results in this paper suggest that the quality of policies and institutions is strongly related to the extent to which exporters and importers are able to create decent employment opportunities. An improvement in the quality of policies and institutions, in particular with regards to infrastructure, gender and the rural sector, hence appears to be an important factor to ensure that trade liberalization can contribute to an improvement of the labour market situation in Africa.

The next section describes in more detail the data source that is used in this paper. Section 3 presents the underlying empirical methodology to quantify the employment premia of exporting and importing, and to determine their respective drivers. Section 4 discusses the results. The final section concludes.

2 Data

2.1 Firm-level data

This paper uses firm-level data for manufacturing firms from the World Bank Enterprise Surveys. The database consists in total of over 15,391 observations for manufacturing firms, comprising cross-sectional data from 65 surveys conducted in 47 African countries between 2006 and 2014. Table A1 in the Appendix provides an overview of all the surveys that are used in this paper. The data are comparable across surveys. For one country, the Democratic Republic of Congo, data from three surveys are available. For 16 countries, we have data from two surveys. For the remaining 30 countries, data have only been collected once.⁷ The data do not allow us to engage in comparisons over time, but they do allow us to engage in comparisons across firms.

For different surveys, the sample size varies between 21 observations for a survey conducted in 2009 in Liberia, and 2,015 observations for a survey conducted in 2013 in Egypt. The average sample size across surveys is 237 observations. In order to ensure that results are based on sufficient data, we do not consider any regression results, for which the number of observations is less than 100. The firm-level data that are included into the database are representative of formally registered firms that employ at least 5 workers and are not state-owned. On the basis of the information provided in the survey, firms can be assigned to the manufacturing sector in which they operate. We distinguish between 8 different manufacturing industries, namely food and beverages, textiles and garments, wood and paper, chemicals, non-metals and plastics, metals and machinery, furniture and all other manufacturing not included in the preceding categories, based on the ISIC codes reported in the surveys.

Table 1 provides some basic descriptive statistics on the firms included into the firm-level database that is used in this paper.⁸ The table shows that 53 per cent of firms are importers and 23 per cent of firms

⁷ For those countries for which more than one survey has been conducted, the database is in principle an overlapping panel database. However, the number of firms that are observed more than once is very small, so that we can only exploit the cross-section dimension of the dataset.

⁸ Monetary variables in Table 1 such as sales, electricity costs and the average wage cannot be directly interpreted, given that they are reported in logs of national currencies. The regressions, however, will use survey fixed effects to control for differences in reported currencies across different surveys.

are exporters. A firm is defined as an exporter if it exports either directly or indirectly through an intermediary. A firm is defined as an importer if it uses foreign inputs in production, which may be the result of either direct or indirect imports. The average age of the firm is around 17 years. Around 11 per cent of firms in our sample are foreign-owned. The average number of full-time permanent employees reported by firms is 82 of which 21 per cent are women. There are on average close to 24 per cent non-production workers among the full-time permanent employees that firms employ. The temporary employment share in total employment is close to 12 per cent.⁹

Table 1: Descriptives statistics on African manufacturing firms

Variable	Mean	Sd.	Min	Max	N
Exporter dummy (1=exporter)	0.23	0.42	0.00	1.00	14972
Importer dummy (1=importer)	0.53	0.50	0.00	1.00	13837
Firm age (years)	17.40	15.29	0.00	190.00	9808
Ownership (1=foreign)	0.11	0.31	0.00	1.00	15075
Log(Sales)	16.70	2.98	7.31	31.41	13757
Log(Electricity costs)	12.32	3.04	0.00	25.81	13065
Log(Capital stock value)	16.50	2.99	0.69	32.59	9596
Full-time permanent employment (FTPE)	82.40	609.68	1.00	64000.00	15207
Female share in FTPE	21.25	25.58	0.00	100.00	13847
Non-production worker share in FTPE	23.64	18.55	0.00	100.00	12050
Temporary employment share in total employment	11.93	19.36	0.00	99.67	14585

Source: Authors' calculation based on the World Bank Enterprise Surveys.

2.2 Country-level data

In order to investigate whether and how the quality of country-level policies is related to the estimated differences in employment and sub-categories of employment between exporters and non-exporters and between importers and non-importers, we merge the firm-level data from the World Bank Enterprise Surveys to country-level data from the Ibrahim Index for African Governance (IIAG). The IIAG is an index that is published by the Mo Ibrahim Foundation and assesses the quality of governance in every country of the continent. The index is based on a set of categories encapsulating *the provision of political, social and economic goods that a citizen has the right to expect from his or her state, and that a state has the responsibility to deliver to its citizens*. The index hence focuses on policy outcomes, and is therefore of particular relevance to the analysis. Overall, the IIAG is composed of 95 indicators from a broad range of international sources, forming 14 sub-indices that cover issues related to safety and rule of law, participation and human rights, sustainable economic opportunities, and human development.

The analysis in this paper makes use of 3 of the 14 sub-indices, which are measures of the quality of governance with regards to infrastructure, gender and rural sector policies. These 3 sub-indices have been selected, as it is especially policies in these 3 thematic areas that are expected to have a differential impact on trading and non-trading firms, which could then translate into varying differences between exporters and non-exporters and between importers and non-importers, with regards to total employment and different types of employment. The sub-index on infrastructure captures the quality of transport, electricity, water, digital and IT infrastructure. While a high quality infrastructure is likely to benefit all firms, it is likely to benefit trading firms in particular, given the impact of infrastructure on a country's trade performance, which has been documented in numerous studies (see, for example, Francois and

⁹ The firm-level data on different types of employees may cover both formal as well as informal employees. Data on the share of informal employees in different employment categories are not available.

Manchin (2013)). This could then translate into a higher employment premium within countries that have good infrastructure policies. The sub-index on gender aims to measure the level of gender equality in general, women’s political participation, gender balance in education, women’s labour force participation, workplace gender equality, presence of women in judiciary, and the existence of laws on violence against women. Given that it is trading firms that are particularly skill-dependent (Brambilla et al., 2012), these firms may benefit in particular from policies that allow firms to make effective use of women’s skills, which might then translate into higher female employment premia. Finally, the sub-index on the rural sector is based on indicators that are related to topics such as the rural business climate, equal representation in rural areas, or rural accountability and transparency. As it is often trading firms that attract rural workers (Farole, 2016), differences in the quality of rural sector governance may translate into differences in employment premia of trading firms. The range of all sub-indices is from 0 to 100 with higher values indicating a better quality of policies.

Table 2: Descriptive statistics on Ibrahim Index for African Governance

Variable	Mean	Sd.	Min	Max	N
Infrastructure score (index, 0 to 100)	32.76	16.57	7.39	74.04	65
Gender score (index, 0 to 100)	55.48	14.08	25.49	80.98	65
Rural sector score (index, 0 to 100)	53.08	14.15	12.31	82.07	65

Source: Authors’ calculation based on Mo Ibrahim Foundation.

For all 65 surveys, data on the IIAG can be matched to the corresponding firm-level data. Table 2 shows descriptive statistics on the 3 sub-indices that we use, based on the sample of countries and survey years that enters our analysis. With regards to infrastructure, the score varies from 7 for South Sudan in 2014 to 74 for Mauritius in 2009, with an average value of 33. Also the gender score varies widely across countries, ranging from 25 for Guinea-Bissau in 2006 to 81 for Rwanda in 2011, with an average score of 55. Finally, the score that measures the quality of rural sector policies varies between 12 for Zimbabwe in 2011 to 82 for Mauritius in 2009, with an average score of 53.

2.3 Regional aggregation

The analysis is conducted at the aggregate African level, but also by geographic region and Regional Economic Community (REC). As geographic regions, we distinguish North, West, Central, East and Southern Africa. The assignment of countries to the 5 different geographic regions is based on the United Nations Economic Commission for Africa’s sub-regional office coverage. The geographic assignment is thus mutually exclusive and covers all African countries. Table A2 in the Appendix provides a list of countries belonging to each geographic region.

Conducting the analysis by REC is motivated by the role that RECs play in fostering regional integration, and hence regional trade patterns. It is often observed that the RECs, as the building blocks of the African Union, have a common stance on trade-related policies. The link between exporting, importing and employment might hence be specific to different RECs. We therefore assign countries to the 8 ratified African RECs, based on their membership status. The 8 RECs that are considered include the Arab Maghreb Union (AMU), the Community of Sahel-Saharan States (CEN-SAD), the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), the Economic Community of Central African States (ECCAS), the Economic Community of West African States (ECOWAS), the

Intergovernmental Authority on Development (IGAD) and the Southern African Development Community (SADC).

Each country represented in the World Bank Enterprise Surveys belongs to at least one REC; yet some African countries are members of more than one REC for either historical, political or economic reasons. Countries such as Burundi, Djibouti, DRC, Eritrea, Kenya, Rwanda, Sudan and Uganda are even members of 3 different RECs. The assignment to RECs is thus not mutually exclusive. There is also a significant overlap with the geographic regions.¹⁰ Table A3 in the Appendix shows the distribution of countries represented in the dataset over the different RECs.

3 Methodology

The empirical analysis is conducted in two steps. In the first step, we estimate the differences in employment and subcategories of employment between exporters and non-exporters on the one hand, and between importers and non-importers on the other hand. The second step then consists in examining the role of the country-year level quality of policies in explaining the variation in these differences across different country-years.

In order to quantify the differences between exporters and non-exporters, and between importers and non-importers, we run regressions on observations at the firm-level. We estimate the following equations with OLS:

$$E_{ctmi} = \alpha + \beta \cdot EX_{ctmi} + \gamma \cdot IM_{ctmi} + \delta X_{ctmi} + \epsilon_{ct} + \epsilon_m + \epsilon_{ctmi} \quad (1)$$

$$E_{ctmi} = \alpha_m + \beta_m \cdot EX_{ctmi} + \gamma_m \cdot IM_{ctmi} + \delta_m X_{ctmi} + \epsilon_{ct} + \epsilon_{ctmi} \quad (2)$$

$$E_{ctmi} = \alpha_g + \beta_g \cdot EX_{ctmi} + \gamma_g \cdot IM_{ctmi} + \delta_g X_{ctmi} + \epsilon_{ct} + \epsilon_m + \epsilon_{ctmi} \quad (3)$$

$$E_{ctmi} = \alpha_r + \beta_r \cdot EX_{ctmi} + \gamma_r \cdot IM_{ctmi} + \delta_r X_{ctmi} + \epsilon_{ct} + \epsilon_m + \epsilon_{ctmi} \quad (4)$$

where equation (1) is estimated on the full sample of manufacturing firms, equation (2) is estimated by manufacturing sector m , equation (3) is estimated by geographic region g , and equation (4) is estimated by REC r . Index i stands for a particular firm that belongs to a manufacturing sector m and is observed in the survey conducted in country c and year t . Reported standard errors are robust.

The dependent variable E stands for one of the four employment-related indicators. In this paper, we report results for the logarithm of the total number of full-time permanent employees, the share of non-production workers in full-time permanent employment, the share of temporary employees in total employment and the share of women in full-time permanent employment, as dependent variables. The exporter dummy variable EX takes a value of one if the firm exports at least some of its sales. The importer dummy variable IM takes a value of one if the firm imports at least some of its inputs. β , β_m , β_g and β_r are the coefficients of interest on the exporting side and measure the overall, sector-specific, region-specific and REC-specific differences between exporters and non-exporters for the above dependent variables. The coefficients γ , γ_m , γ_g and γ_r are the coefficients of interest on the importing side and correspond to the respective differences between importers and non-importers. X is a vector of control variables, ϵ_{ct} is a survey fixed effect, ϵ_m is a sector fixed effect and ϵ_{ctmi} is the error term.

The vector of control variables includes total sales to control for firm size. The estimated differences between exporters and non-exporters, and between importers and non-importers, are hence to be interpreted as “net of sales”. We also control for electricity costs and the capital stock to account for the

¹⁰ For instance, the REC ECOWAS has a country coverage that is identical to the geographic region of West Africa.

type of economic activity that the firm is engaged in. Moreover, we control for differences in ownership across firms by including a dummy that is one if the firm is foreign-owned. Firm age controls for the age of the firm, which in case of total employment would likely to be positively related to the dependent variable, but could also have an impact on the types of employment used by the firm.

We make an attempt to explain the heterogeneity in the estimated differences between exporters and non-exporters, and between importers and non-importers, across different country-years. In some countries, the differences between firms that trade and those that do not, are higher than in others and we make an attempt to identify the sources of this variation. In order to verify to what extent the country-year specific quality of policies are influencing the estimated differences, we use OLS to estimate the following equation:

$$E_{ctmi} = \alpha + \beta \cdot EX_{ctmi} + \beta_I \cdot EX_{ctmi} \cdot I_{ct} + \gamma \cdot IM_{ctmi} + \gamma_I \cdot IM_{ctmi} \cdot I_{ct} + \delta X_{ctmi} + \epsilon_{ct} + \epsilon_m + \epsilon_{ctmi} \quad (5)$$

where I_{ct} is a selected measure for the country-year specific quality of policies, where we consider one by one the IIAG scores on infrastructure, gender and rural sector policies. We interact these measures, selected for each employment indicator individually, with the importer and exporter dummy variables. The estimated coefficients β_I and γ_I indicate whether the country-year specific quality of policies is positively or negatively related to the estimated differences between firms engaged in exporting and importing and those that are not.

4 Results

4.1 Full-time employment

Table 3 shows the estimated average difference in the number of full-time permanent employees between exporting and non-exporting, and between importing and non-importing firms. Results for the full sample of African firms show a statistically strongly significant and positive premium of both importing and exporting on employment with changing magnitudes across different specifications. When only controlling for sector- and survey-level differences and including firms' exporting and importing status individually into two separate regressions, we find an exporter and importer premium of respectively 201.3 per cent and 93.3 per cent. Exporters hence employ around three times as many full-time permanent employees than non-exporters, while importers employ twice as many full-time permanent employees than non-importers (columns 1 and 2). As export and import status are correlated, these premia become smaller, when including exporting and importing status simultaneously into one regression, with values of 175.7 per cent and 58.7 per cent, respectively (column 3).¹¹

Firms that are exporters can make use of increasing returns to scale by also selling to export markets. This is naturally expected to come along with an increased workforce. However, we also include firm-level sales as control variable. While this is expected to reduce the positive employment premium of exporting and importing, the question arises whether some positive employment premium still remains, even when comparing exporters and non-exporters with the same value of sales. We indeed find that the inclusion of firm-level sales as control variable reduces the employment premium of exporting to 61.3 per cent, which however is still statistically significant (column 4). Also the employment premium of importing persists and corresponds to 12.9 per cent.

¹¹ The percentage differences between exporting and non-exporting or importing and non-importing firms is $100 \cdot (\exp(\beta) - 1)$, where β is the respective estimated coefficient reported in the tables.

Table 3: Exporting, importing and full-time permanent employment

	Dependent variable: Log(Full-time permanent employment)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exporter	1.103*** (0.028)		1.014*** (0.030)	0.478*** (0.024)	0.436*** (0.023)	0.387*** (0.026)	0.382*** (0.026)	0.428*** (0.037)
Importer		0.659*** (0.022)	0.462*** (0.021)	0.121*** (0.017)	0.095*** (0.017)	0.075*** (0.018)	0.074*** (0.018)	0.131*** (0.029)
Log(Sales)				0.382*** (0.006)	0.298*** (0.007)	0.313*** (0.010)	0.311*** (0.010)	0.288*** (0.014)
Log(Electricity costs)					0.147*** (0.007)	0.119*** (0.008)	0.118*** (0.008)	0.127*** (0.012)
Log(Capital stock value)						0.054*** (0.006)	0.053*** (0.006)	0.041*** (0.009)
Foreign owned							0.061** (0.031)	0.066 (0.050)
Log(Firm age)								0.133*** (0.016)
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.26	0.21	0.30	0.61	0.65	0.68	0.68	0.65
Number of observations	14855	13743	13613	12523	11496	8989	8956	3971

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Robust standard errors are reported in brackets.

The significantly positive coefficients for exporting and importing status persist, even after including additional control variables. By including the electricity costs of firms' operations and the value of firms' capital stock, we aim to control for the type of firms' activity within the given sector, which is already controlled for through the sector dummy variables (columns 5 and 6). We also control for foreign ownership (column 7). Finally, despite losing half of our sample due to missing data, we also control for firm age (column 8). Regardless of the chosen specification, we find strong evidence for an employment premium of trading, which varies between 46.5 per cent and 54.7 per cent for exporting and between 7.7 per cent and 14.0 per cent for importing. The relatively small variation in the magnitudes of the estimates across different specifications, confirms the robustness of our results.

These results are in line with the empirical trade literature that has looked at the dependency of the size of a firm's workforce on its trading status. Positive employment premia of exporting have been documented extensively in the recent firm-level trade literature (Bernard et al., 2007; Mayer and Ottaviano, 2008). This also includes studies that provide evidence for Africa (Van Biesebroeck, 2005; Brambilla et al., 2015), which however are usually based on a smaller set of control variables. Positive employment premia of importing have also been documented (Bernard et al., 2012), but evidence is, to our knowledge, not available for African countries.

Table 4 presents results by REC, geographic region and sector. The first set of coefficients corresponds to the full-time permanent employment premia of exporting and importing, estimated with the relatively basic specification that apart from the exporter and importer dummy variables only controls for sector- and survey-specific fixed effects (corresponding to column 3 of Table 3). In this specification, the differences between exporters and non-exporters, and between importers and non-importers, are positive and statistically significant for all RECs, geographic regions and sectors.

Table 4: Exporting, importing and full-time permanent employment by sector, geographic region and Regional Economic Community (REC)

Sample	Specification with <i>Survey FE</i> and <i>Sector FE</i> as control variables			Specification with <i>Survey FE</i> , <i>Sector FE</i> , <i>Log(Sales)</i> , <i>Log(Electricity costs)</i> , <i>Log(Capital stock value)</i> , <i>Foreign owned</i> and <i>Log(Firm age)</i> as control variables		
	N	Importer	Exporter	N	Importer	Exporter
Full sample	13613	0.462***	1.014***	3971	0.131***	0.428***
<i>By REC</i>						
AMU	650	0.522***	0.832***	364	0.113	0.355***
CENSAD	6804	0.356***	0.965***	2450	0.075**	0.405***
COMESA	6922	0.619***	1.190***	2644	0.140***	0.422***
EAC	2416	0.544***	0.996***	436	0.067	0.426***
ECCAS	1455	0.321***	0.875***	247	0.042	0.293*
ECOWAS	4128	0.267***	0.585***	811	0.058	0.300***
IGAD	2058	0.597***	0.939***	330	0.293**	0.220
SADC	5130	0.548***	1.098***	1308	0.206***	0.561***
<i>By geographic region</i>						
Northern	2721	0.543***	1.331***	1636	0.062	0.386***
Western	4128	0.267***	0.585***	811	0.058	0.300***
Central	339	0.337**	0.905***			
Eastern	3918	0.584***	1.053***	849	0.148**	0.532***
Southern	3464	0.536***	1.033***	817	0.251***	0.320***
<i>By sector</i>						
Food & beverages	3414	0.611***	1.023***	887	0.211***	0.442***
Textiles & garments	2578	0.390***	1.215***	845	0.215***	0.500***
Wood & paper	1541	0.378***	0.772***	449	0.094	0.191**
Chemicals	839	0.396***	0.797***	247	0.091	0.291**
Non-metals & plastics	1294	0.392***	0.879***	455	0.029	0.319***
Metals & machinery	1755	0.552***	0.925***	517	0.051	0.411***
Furniture	1470	0.236***	0.567***	331	0.133	0.320**
Other manufacturing	722	0.328***	1.097***	240	0.044	0.312*

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Robust standard errors are reported in brackets. N refers to the number of observations. *Exporter (Importer)* refers to the estimated difference between exporters and non-exporters (importers and non-importers), based on the respective specification.

The second set of coefficients corresponds to the full-time permanent employment premia of exporting and importing, estimated with a specification that also controls for sales, electricity costs, capital stock, ownership status and firm age (corresponding to column 8 of Table 3). In this specification, the magnitudes of the estimated premia are considerably lower. With regards to the results by REC, the estimated difference between importers and non-importers, however, is still positive and statistically significant for 4 out of the 8 RECs, ranging from 7.8 per cent for CENSAD to 34.0 per cent for IGAD. When considering

different geographic regions, the employment premium of importing is statistically significant for 2 out of the 4 regions, and corresponds to 16.0 per cent for Eastern Africa and 28.5 per cent for Southern Africa. With regards to the employment premium of exporting, the results are statistically significant for all the RECs but IGAD and for all the geographic regions, showing that exporters employ more full-time employees than non-exporters in almost all regions. The statistically significant differences between exporters and non-exporters vary between 34.0 per cent for ECCAS and 75.2 per cent for SADC.

The relatively high employment premia of both exporting and importing for COMESA and SADC are in line with their efforts to advance regional integration amongst their respective member states, and to foster the Tripartite Free Trade Area (TFTA) and the Continental Free Trade Area (CFTA).¹² These extensive efforts suggest that COMESA and SADC member countries might have a lot to gain from trade, which may be expressed at least to some extent through the relatively high estimated employment premia of exporting and importing.

With regards to the results by sector, the estimated employment premia indicate that importers in food and beverages employ 23.5 per cent more full-time permanent employees than non-importers in that sector. Also the employment premia of importing in the textiles and garments sector is statistically significant and corresponds to 24.0 per cent. For all other sectors, we are not able to detect any statistically significant employment differences between importers and non-importers. Being an exporter, in turn, has significant positive employment premia in all the sectors, and is highest again in food and beverages, and textiles and garments, where exporting firms respectively employ 55.6 per cent and 64.9 per cent more full-time permanent employees than non-exporters. In many African states, the above mentioned sectors are relatively well integrated into global value chains. Our results imply that these firms on average have a particularly large workforce.

4.2 Non-production employment

Table 5 shows the estimated difference in the share of non-production workers in total full-time permanent employment between exporting and non-exporting, and between importing and non-importing firms. In none of the specifications, we are able to detect a statistically significant difference in the share of non-production workers between exporters and non-exporters. In contrast, African importers have a significantly higher share of non-production workers in their workforce than non-importers. This non-production worker premium of importing is positive and strongly significant in all specifications. The difference between importers and non-importers amounts to 2.0-2.5 percentage points, depending on the particular specification.

Non-production workers typically correspond to workers with managerial or clerical tasks. Firms with a broader management structure will employ more of these workers. The results that we obtain for African firms suggest that a broader management structure is needed to organize production processes that involve imported inputs. In view of the low quality of transport and IT infrastructure that is often encountered on the African continent, conducting foreign market research to find appropriate suppliers, and setting up a logistics network to import inputs are likely to require more workers, which would be in line with our results.

¹² Already in 2008, COMESA, SADC and EAC (which is composed of member states that are either member of COMESA or SADC) issued a Memorandum of Understanding on the TFTA, in which they endorse *the need to harmonise the policies of the three institutions in the context of the overall objective of all the states to attain continental integration as envisaged under the Constitutive Act of the African Union and the Treaty Establishing the African Economic Community.*

Table 5: Exporting, importing and the share of non-production workers in full-time permanent employment

	Dependent variable: Share of non-production employment							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exporter	0.397 (0.422)		-0.171 (0.433)	-0.418 (0.474)	-0.582 (0.490)	-0.801 (0.526)	-0.839 (0.528)	-0.427 (0.790)
Importer		2.467*** (0.341)	2.322*** (0.349)	2.058*** (0.370)	1.958*** (0.377)	2.070*** (0.407)	2.039*** (0.408)	2.087*** (0.628)
Log(Sales)				0.352*** (0.095)	0.599*** (0.133)	0.436*** (0.167)	0.403** (0.168)	0.417* (0.227)
Log(Electricity costs)					-0.243* (0.134)	-0.145 (0.151)	-0.168 (0.152)	-0.448** (0.207)
Log(Capital stock value)						0.153 (0.140)	0.167 (0.140)	0.079 (0.189)
Foreign owned							1.157* (0.656)	0.649 (1.053)
Log(Firm age)								0.692** (0.351)
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.11	0.11	0.11	0.12	0.12	0.13	0.13	0.11
Number of observations	11875	11743	11645	10705	9930	7986	7954	3782

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Robust standard errors are reported in brackets.

The empirical literature has traditionally used non-production workers to proxy for high-skilled employment, and production workers to proxy for low-skilled employment. This, however, denies the fact that there exist low-skilled non-production workers as well as high-skilled production workers. Also recent evidence suggests that it is important to distinguish skills and the type of tasks. While Kasahara et al. (2016) find evidence for skill upgrading within each occupation after a firm starts to import, they do not find strong evidence for an impact of importing on the relative demand for non-production workers. Evidence for France on the basis of firm-transaction-level trade data points to a negative impact of increasing imports of finished goods on the number of production workers, especially for large firms (Biscourp and Kramarz, 2007). In the African context, sector-level evidence for South Africa indicates that trade overall has a positive impact on the use of labour relative to capital, but it has a negative effect on non-production relative to production employment (Fedderke et al., 2012).

Table 6 includes the estimated non-production worker premia of exporting and importing by REC, geographic region and sector. For 3 RECs, namely AMU, CENSAD and ECOWAS, we find that importers employ a significantly higher share of non-production workers than non-importers. For 3 sectors, namely wood and paper, chemicals, and non-metals and plastics, we find that importers employ relatively more non-production workers than non-importers. Differences between exporters and non-exporters in the share of non-production workers in their workforce are not significant for any REC or sector. Differences are weakly significant for 3 geographic regions. The estimated coefficient is positive for Southern Africa and negative for Northern and Eastern Africa.

Table 6: Exporting, importing and the share of non-production workers in full-time permanent employment by sector, geographic region and Regional Economic Community (REC)

Sample	Specification with <i>Survey FE</i> and <i>Sector FE</i> as control variables			Specification with <i>Survey FE</i> , <i>Sector FE</i> , <i>Log(Sales)</i> , <i>Log(Electricity costs)</i> , <i>Log(Capital stock value)</i> , <i>Foreign owned</i> and <i>Log(Firm age)</i> as control variables		
	N	Importer	Exporter	N	Importer	Exporter
Full sample	11645	2.322***	-0.171	3782	2.087***	-0.427
<i>By REC</i>						
AMU	636	4.265**	-5.894***	362	6.681**	-3.812
CENSAD	5433	2.751***	0.236	2382	2.114**	-0.700
COMESA	5934	0.680	-0.679	2459	0.292	0.013
EAC	2295	2.392***	-1.526	429	2.383	-2.570
ECCAS	1157	1.507	-1.843	247	-1.145	-4.480
ECOWAS	2940	3.869***	1.826*	785	4.521***	1.601
IGAD	1887	0.560	-2.196**	321	0.585	-1.654
SADC	4372	2.197***	-0.219	1168	1.629	0.044
<i>By geographic region</i>						
Northern	2592	0.688	-1.859**	1595	0.770	-2.163*
Western	2940	3.869***	1.826*	785	4.521***	1.601
Central	114	0.526	-0.089			
Eastern	3282	2.146***	-2.117***	708	1.384	-3.295*
Southern	3107	1.535**	0.481	810	1.466	3.773**
<i>By sector</i>						
Food & beverages	2835	1.956***	-0.583	832	1.522	-0.273
Textiles & garments	2213	0.088	-0.303	814	-0.608	-0.492
Wood & paper	1330	2.839***	0.465	417	4.063**	0.905
Chemicals	725	4.209**	-1.357	236	8.559***	0.532
Non-metals & plastics	1113	2.190*	-0.081	437	4.049**	-0.487
Metals & machinery	1544	3.258***	1.570	496	2.334	0.995
Furniture	1266	2.401**	2.270	317	2.231	-0.485
Other manufacturing	619	3.156*	-1.437	233	-1.101	0.078

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Robust standard errors are reported in brackets. N refers to the number of observations. *Exporter (Importer)* refers to the estimated difference between exporters and non-exporters (importers and non-importers), based on the respective specification.

4.3 Female employment

Table 7 reports estimated differences in the share of women in full-time permanent employment between exporting and non-exporting, and between importing and non-importing firms. When including exporter and importer status individually into the regressions, we find exporters and importers to have a 3.2 and 2.1 percentage points higher share of women in full-time permanent employment, compared with

their respective non-trading counterparts (columns 1 and 2). When considering exporter and importer status simultaneously, the difference between exporters and non-exporters barely changes. The differences between importers and non-importers becomes smaller, but remains significant (column 3).

Table 7: Exporting, importing and the share of female workers in full-time permanent employment

	Dependent variable: Share of female employment							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exporter	3.196*** (0.471)		3.191*** (0.505)	3.433*** (0.552)	3.693*** (0.574)	3.935*** (0.649)	3.883*** (0.650)	5.961*** (0.938)
Importer		2.131*** (0.403)	1.396*** (0.415)	1.729*** (0.443)	1.716*** (0.459)	1.352*** (0.506)	1.326*** (0.508)	-0.981 (0.774)
Log(Sales)				-0.283*** (0.105)	0.018 (0.150)	0.090 (0.191)	0.097 (0.192)	-0.103 (0.260)
Log(Electricity costs)					-0.622*** (0.144)	-0.555*** (0.171)	-0.549*** (0.171)	-0.731*** (0.239)
Log(Capital stock value)						-0.102 (0.158)	-0.111 (0.159)	-0.119 (0.209)
Foreign owned							-0.092 (0.770)	2.914** (1.358)
Log(Firm age)								-1.472*** (0.419)
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.31	0.32	0.32	0.32	0.33	0.34	0.34	0.37
Number of observations	13661	12627	12546	11578	10662	8417	8384	3847

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Robust standard errors are reported in brackets.

With additional firm-level controls, the differences in the share of female workers in total employment between exporting and non-exporting firms interestingly become more pronounced, with point estimates of 3.4-6.0 percentage points (columns 4-8). The share of female workers in importing firms is estimated to be 1.3-1.7 percentage points higher, while accounting for various firm characteristics (columns 4-7). However, it loses its significance when also firm age is taken into consideration, but these results are based only on a relatively small number of observations (column 8). It is interesting to notice that the coefficient on firm age is strongly significant and negative, which points out that older, and hence likely more traditional firms have significantly lower shares of female employment. This is in line with the changing role of women in many African countries, where female empowerment and participation in the labour force is a relatively new concept and household chores and upbringing of children have been long treated as the only activities expected from wives and daughters.

These results show that exporting could potentially contribute to mitigating gender differences with respect to employment that prevail in many African countries. In the quest for the most competent personnel, it appears that exporting firms heavily rely on the contribution of women to their business, which may then result in the higher share of women in the workforce that we observe.

These findings are also in line with substantive evidence from various regions that export orientation is related to the increased use of female workers. The case of export-oriented Mexico cities shows that female employment concentrates in export-oriented sectors (Tamborini, 2007). The positive correlation of export orientation with the "feminization of labour" was also showcased in the cases of Turkey (Baslevant

and Onaran, 2004; Ozler, 2000), Bangladesh (Kabeer and Mahmud, 2004) or India (Ghosh, 2004). For Africa, in contrast, empirical evidence on the links between trade and female employment has so far been relatively scarce. Only for the Kenyan manufacturing sector, it has been documented that exporters tend to employ more female workers than non-exporters (Were, 2012).

Table 8: Exporting, importing and the share of women in full-time permanent employment by sector, geographic region and Regional Economic Community (REC)

Sample	Specification with <i>Survey FE</i> and <i>Sector FE</i> as control variables			Specification with <i>Survey FE</i> , <i>Sector FE</i> , <i>Log(Sales)</i> , <i>Log(Electricity costs)</i> , <i>Log(Capital stock value)</i> , <i>Foreign owned</i> and <i>Log(Firm age)</i> as control variables		
	N	Importer	Exporter	N	Importer	Exporter
Full sample	12546	1.396***	3.191***	3847	-0.981	5.961***
<i>By REC</i>						
AMU	604	-1.030	8.624***	359	-5.281	13.270***
CENSAD	6012	-0.345	3.432***	2373	-1.624	5.984***
COMESA	6406	0.823	4.064***	2566	-0.439	6.594***
EAC	2293	2.552***	2.978***	424	1.352	6.077***
ECCAS	1388	3.912***	2.852	241	4.241	-2.222
ECOWAS	3558	0.594	0.615	778	-0.214	0.427
IGAD	1961	2.281**	2.406**	316	1.542	8.103***
SADC	4728	3.287***	3.867***	1269	-0.193	6.529***
<i>By geographic region</i>						
Northern	2511	-0.967	5.500***	1593	-2.282**	8.943***
Western	3558	0.594	0.615	778	-0.214	0.427
Central	325	1.689	4.733			
Eastern	3720	1.782**	5.882***	825	0.076	9.335***
Southern	3165	3.836***	1.111	790	0.192	3.401
<i>By sector</i>						
Food & beverages	3189	-0.456	4.658***	858	-3.140*	9.658***
Textiles & garments	2331	0.400	0.870	825	-4.206*	8.602***
Wood & paper	1455	6.089***	1.574	436	6.495***	5.882**
Chemicals	763	-2.773	0.994	240	-2.154	1.137
Non-metals & plastics	1199	0.553	4.794***	440	-0.453	6.305***
Metals & machinery	1617	3.032***	1.368	498	1.461	0.811
Furniture	1334	0.396	4.853***	317	-1.213	7.186**
Other manufacturing	658	0.733	3.961**	233	-3.767	1.669

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Robust standard errors are reported in brackets. N refers to the number of observations. *Exporter (Importer)* refers to the estimated difference between exporters and non-exporters (importers and non-importers), based on the respective specification.

In Table 8, we report results for premia of exporting and importing on the share of female employment by region, REC and sector. The last specification with all the controls yields insignificant importer premia in all RECs and regions except for North Africa, where a negative premium of 2.3 percentage points is observed. On a sectoral level, the fraction of female employment is significantly different from

non-importers in three out of eight sectors; however, the sign varies across sectors, being positive only in wood and paper firms. The results on importing hence appear to be inconclusive.

The estimated premia of exporting are all positive when significant. Moreover, their magnitude ranges from 6.0 to 13.3 percentage points across regions, RECs and sectors, providing strong evidence for a positive relation of exporting status with the share of female employment. The coefficients are significant for 6 out of 8 RECs, 2 out of 4 geographic regions and 5 out of 8 sectors. The highest premium is reported for the AMU countries, which are countries with a relatively low female participation in the labour force, suggesting that especially exporters in those countries have an important role to attract women into the workforce.

4.4 Temporary employment

Table 9 shows that the share of temporary workers employed by exporters is by 2.8-3.5 percentage points higher than the corresponding share employed by non-exporters, depending on the specification. Importers are found to employ a significantly higher share of temporary employees than non-importers when only controlling for survey and sector fixed effects. In the specifications with more control variables, we do not find any more any correlation of the temporary employment share with importer status. The use of temporary employment contracts is an indicator of employment security. The fact that temporary employment is more heavily used by exporting firms suggests that these firms have a particular need for flexibility. Even though firms that export can hedge weak demand in one market through their business in other markets, firms that export are at the same time exposed to more sources of demand volatility.

Table 9: Exporting, importing and the share of temporary workers in total employment

	Dependent variable: Share of temporary employment							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Exporter	3.347*** (0.418)		3.415*** (0.453)	3.533*** (0.492)	3.435*** (0.514)	3.242*** (0.574)	3.172*** (0.578)	2.760*** (0.835)
Importer		0.954*** (0.344)	0.313 (0.359)	0.157 (0.380)	0.149 (0.392)	0.425 (0.427)	0.368 (0.428)	-0.799 (0.684)
Log(Sales)				0.063 (0.090)	0.086 (0.123)	0.244 (0.166)	0.210 (0.166)	-0.359 (0.228)
Log(Electricity costs)					0.053 (0.127)	0.078 (0.158)	0.073 (0.158)	0.107 (0.225)
Log(Capital stock value)						-0.150 (0.139)	-0.156 (0.139)	0.235 (0.197)
Foreign owned							1.407* (0.740)	1.267 (1.181)
Log(Firm age)								-0.017 (0.344)
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.094	0.094	0.098	0.099	0.090	0.088	0.088	0.13
Number of observations	14288	13246	13133	12127	11192	8852	8820	3843

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Robust standard errors are reported in brackets.

Table 10: Exporting, importing and the share of temporary workers in total employment by sector, geographic region and Regional Economic Community (REC)

Sample	Specification with <i>Survey FE</i> and <i>Sector FE</i> as control variables			Specification with <i>Survey FE</i> , <i>Sector FE</i> , <i>Log(Sales)</i> , <i>Log(Electricity costs)</i> , <i>Log(Capital stock value)</i> , <i>Foreign owned</i> and <i>Log(Firm age)</i> as control variables		
	N	Importer	Exporter	N	Importer	Exporter
Full sample	13133	0.313	3.415***	3843	-0.799	2.760***
<i>By REC</i>						
AMU	635	-6.976***	7.169***	362	-11.796***	7.476***
CENSAD	6632	-0.039	3.308***	2411	-1.620**	2.310**
COMESA	6599	0.073	2.584***	2538	-0.996	1.935*
EAC	2308	-0.235	5.450***	427	-2.262	8.807***
ECCAS	1415	1.570	7.045***	244	-3.779	8.135**
ECOWAS	4006	0.889	5.135***	780	0.450	2.291
IGAD	1986	0.498	3.833***	321	-2.939	7.381**
SADC	4826	0.584	3.122***	1215	1.293	1.393
<i>By geographic region</i>						
Northern	2684	-1.702**	1.118	1628	-2.824***	1.898*
Western	4006	0.889	5.135***	780	0.450	2.291
Central	315	-1.841	2.114			
Eastern	3585	0.287	4.237***	759	-1.033	2.773
Southern	3420	0.706	3.655***	805	1.103	4.539**
<i>By sector</i>						
Food & beverages	3276	-0.379	8.161***	850	-3.545**	8.467***
Textiles & garments	2498	1.443*	2.026**	827	2.428**	2.071
Wood & paper	1469	0.566	3.672**	423	0.674	-0.044
Chemicals	816	-1.410	1.024	242	-2.087	1.660
Non-metals & plastics	1252	-0.713	2.465*	444	-0.751	0.179
Metals & machinery	1694	-0.207	1.524	502	1.096	-1.306
Furniture	1430	0.400	1.049	320	-1.951	0.607
Other manufacturing	698	1.914	4.679***	235	-1.751	4.724

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Robust standard errors are reported in brackets. N refers to the number of observations. *Exporter (Importer)* refers to the estimated difference between exporters and non-exporters (importers and non-importers), based on the respective specification.

The literature appears to confirm that there is a link between exporting and sales volatility (Nguyen and Schaur, 2012), which may help explaining exporters' higher demand of temporary workers. For the case of Japan, it has recently been shown that firms engaged in trade use temporary employment more extensively, supporting the idea of temporary contracts to act as an employment buffer for trading firms (Machikita and Sato, 2016). In any case, being flexible appears to be one of the main motives behind the use of temporary contracts (Aleksynska and Berg, 2016). For African firms, there is only scarce empirical

evidence on the use of temporary employment within firms. For the case of Kenya, no strong evidence has been found that being an exporter has a positive impact on the share of temporary workers, despite rising casualization of employment in manufacturing firms (Were, 2011).

Table 10 shows the results by REC, regions and sector. While there is no statistically significant relation between importing status and the share of temporary workforce in total employment for the full sample, we find a negative coefficient for selected sub-samples. For the specification with most control variables, we find that the share of temporary workers within importers is by 11.8 percentage points lower in AMU and by 1.6 percentage points lower in CEN-SAD. For Northern Africa as geographic region, we find a temporary employment share that is by 2.8 percentage points lower within importers, compared with non-importers. Results by sector indicate a significantly lower share of temporary workers within importers in food and beverages. Importing can be associated with technology upgrading (Bas and Berthou, 2016). Firms that use an upgraded and potentially more sophisticated technology may need to rely on a more stable workforce in order to accumulate sufficient human capital within the firm that can deal with this technology.

For importers in the textiles and garments sector, we find significantly higher shares of temporary workers compared with non-importers. Some of these firms may be supplier firms in garment value chains, for which a heavy use of temporary employment has been documented earlier for other countries (Ahmed and Nathan, 2016). The significant larger share of temporary workers in exporting firms, compared with non-exporters, ranges from 1.9 to 8.8 percentage points and is confirmed for 6 out of 8 RECs, 2 out of 4 geographic regions and the food and beverages sector. For the food and beverages sector, this might be related to the relatively high seasonality in this sector, when compared to other sectors.

4.5 The role of policies: what is driving the differences between trading and non-trading firms?

In this section, we examine to what extent the quality of country-specific policies determines the difference between exporting and non-exporting firms, and between importing and non-importing firms, with regards to total employment and different types of employment. For this analysis, we run regressions, including an interaction term between the dummy variables that respectively indicate firms' exporter and importer status and different country-specific measure for the quality of policies, taken from the Ibrahim Index for African Governance (IIAG).

Infrastructure policies

A high quality of infrastructure policies is expected to be beneficial for all African firms. Empirical evidence from African countries highlights the positive impact of infrastructure on the economy. It has been shown that infrastructure capital has a positive effect on growth in South Africa (Fedderke and Bogetic, 2009) and the proximity to physical infrastructure is a key determinant in the spatial distribution of manufacturing exporters in that country (Naude and Matthee, 2010). In addition, electricity infrastructure can play a crucial role in fostering firm productivity, as is the case in Uganda, Tanzania and Zambia (Moyo, 2013).

Among all firms, trading firms are particularly reliant on a high quality of infrastructure, given that their logistics network for exporting and importing and operations are heavily dependent on it. With a good infrastructure, it is likely to be easier particularly for trading firms to benefit from economies of scale and grow bigger. For this reason, we would expect the employment premium of exporting and importing to be higher, the higher the quality of infrastructure in a country is. At the same time, the share of

non-production workers would be expected to be lower, as relatively less manpower will be needed to organize trade and relatively more manpower can focus on production.

Table 11 confirms these hypotheses. Despite negligible magnitudes, both the importer and exporter premia on total employment show positive and significant correlation with the index that measures the quality of infrastructure policies, at least in the majority of specifications. A better infrastructure appears to benefit employment in trading firms relative to non-trading firms. In terms of magnitudes, it is particularly exporting that displays a strong positive correlation with full-time employment. Analyzing further the relation of the quality of infrastructure policies with the share of workers in non-production employment, it gives interesting insights into possible shifts in the composition of the workforce within importing and exporting firms, related to infrastructure. Results indicate that especially importers in countries with a better infrastructure have relatively less non-production workers in their workforce than their non-trading counterparts.

Table 11: Infrastructure policies and differences in full-time permanent employment and the share of non-production employment between trading and non-trading firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable: Log(Full-time permanent employment)								
Exporter	0.669***		0.634***	0.279***	0.277***	0.277***	0.273***	0.290***
Export*Infrastructure	0.011***		0.009***	0.005***	0.004***	0.003**	0.003*	0.003
Importer		0.375***	0.312***	0.041	0.014	0.018	0.013	0.096
Import*Infrastructure		0.008***	0.004***	0.002**	0.002**	0.002*	0.002*	0.001
Log(Sales)				0.381***	0.297***	0.312***	0.311***	0.288***
Log(Electricity costs)					0.147***	0.119***	0.118***	0.127***
Log(Capital stock value)						0.054***	0.053***	0.040***
Foreign owned							0.063**	0.070
Log(Firm age)								0.134***
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.26	0.21	0.30	0.61	0.65	0.68	0.68	0.65
Number of observations	14855	13743	13613	12523	11496	8989	8956	3971
Dependent variable: Share of non-production employment								
Exporter	2.078*		0.820	1.046	0.287	-0.283	-0.342	2.982
Export*infrastructure	-0.040*		-0.023	-0.035	-0.020	-0.011	-0.011	-0.074
Importer		4.502***	3.962***	3.422***	3.470***	3.571***	3.510***	3.302*
Import*infrastructure		-0.053***	-0.043**	-0.037*	-0.040*	-0.039*	-0.038*	-0.029
Log(Sales)				0.360***	0.604***	0.441***	0.409**	0.434*
Log(Electricity costs)					-0.240*	-0.146	-0.169	-0.446**
Log(Capital stock value)						0.155	0.170	0.096
Foreign owned							1.116*	0.613
Log(Firm age)								0.662*
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.11	0.11	0.11	0.12	0.12	0.13	0.13	0.11
Number of observations	11875	11743	11645	10705	9930	7986	7954	3782

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Regressions in columns 1-8 follow the respective specifications in columns 1-8 of Tables 3 and 5.

Gender policies

With regards to the differences in the share of female employment between exporting and non-exporting, and between importing and non-importing firms, we find the quality of gender policies to be positively

correlated with the difference in the share of female employment between importers and non-importers. These results suggest that policies that promote the equal treatment of men and women in various areas of life, might facilitate female employment within importing firms in particular. Firms that use imports often employ a more complex production technology and are therefore in particular reliant on the skills of workers from both sexes. Societies in which gender equality is promoted are likely to have higher female labour force participation rates, enabling importers to draw from a pool of workers from both sexes.

Table 12: Gender policies and differences in the share of female employment between trading and non-trading firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable: Share of female employment								
Exporter	0.922		1.595	2.894	2.316	3.559*	3.574*	2.557
Export*Gender	0.042		0.029	0.009	0.024	0.006	0.004	0.068
Importer		-1.454	-1.717	-2.020	-1.424	-2.610	-2.741	-0.995
Import*Gender		0.068***	0.059**	0.071***	0.059**	0.075**	0.077**	0.000
Log(Sales)				-0.285***	0.016	0.090	0.098	-0.089
Log(Electricity costs)					-0.615***	-0.548***	-0.541***	-0.717***
Log(Capital stock value)						-0.106	-0.114	-0.121
Foreign owned							-0.184	2.733**
Log(Firm age)								-1.492***
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Survey FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R2	0.31	0.32	0.32	0.32	0.33	0.34	0.34	0.37
Number of observations	13661	12627	12546	11578	10662	8417	8384	3847

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Regressions in columns 1-8 follow the respective specifications in columns 1-8 of Table 7.

Rural sector policies

The difference in the share of temporary workers between exporting and non-exporting firms, and between importing and non-importing firms, is negatively correlated with the quality of rural sector policies, a finding that fits to the African context. A large proportion of Africans lives in rural areas and agriculture is a major employment provider in many countries. These workers are frequently exposed to changing weather patterns or natural calamities, and are thus particularly vulnerable to shocks. With a high quality of rural sector policies, agricultural workers will be better protected from these shocks. However, in countries where rural sector policies are of rather poor quality, agricultural workers will be forced to take up temporary or seasonal employment opportunities elsewhere, which more often can be found in firms engaged in trade or global value chains. This then results in the significantly negative coefficient that we find for the interaction between exporter status and the quality of rural sector policies, and importer status and the quality of rural sector policies.

The literature also supports the above findings. In South Africa and Kenya, it is observed that commercial farming destined for UK supermarkets contributes to the expansion of temporary, low-paid and insecure employment, drawn primarily from agricultural and smallholder households and occupied to a large extent by women, identifying some additional gender implications (Barrientos et al., 2005). In the case of the South African export fruit sector, it is found that producers tend to cut on the permanent workforce and rely more heavily on contractual and seasonal labour force, following expanding global value chain linkages, which illustrates the role of temporary workers in trading firms (Kritzinger et al., 2004).

Table 13: Rural sector policies and differences in the share of temporary employment between trading and non-trading firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable: Share of temporary employment								
Exporter	7.643***		7.620***	8.031***	9.460***	8.762***	8.960***	12.430***
Export*Rural sector	-0.074**		-0.072*	-0.077*	-0.103**	-0.094*	-0.099**	-0.167***
Importer		5.040***	4.345***	4.228**	5.066***	4.997***	5.025***	3.347
Import*Rural sector		-0.073***	-0.073**	-0.074**	-0.089***	-0.083**	-0.085***	-0.076*
Log(Sales)				0.089	0.109	0.265	0.231	-0.334
Log(Electricity costs)					0.067	0.080	0.075	0.093
Log(Capital stock value)						-0.133	-0.138	0.274
Foreign owned							1.420*	1.329
Log(Firm age)								-0.050
R2	0.094	0.095	0.099	0.10	0.092	0.090	0.090	0.13
Number of observations	14288	13246	13133	12127	11192	8852	8820	3843

Note: *, ** and *** indicate statistical significance at the 10, 5 and 1% level, respectively. Regressions in columns 1-8 follow the respective specifications in columns 1-8 of Table 9.

5 Conclusions

In this paper, we have studied whether African exporters and importers are different from their respective non-trading counterparts, with respect to total and different types of employment. Using data on African manufacturing firms from the whole continent, this paper contributes to the firm-level literature that studies the relationship between exporting, importing and the labour market. The creation of decent jobs is crucial to achieve inclusive and sustainable economic growth, in particular in Africa, whose working-age population will be rapidly increasing over the coming decades, and needs to be absorbed into the labour market to profit from this demographic dividend.

The paper identifies four main results on the relation between firms' trade status and employment. First, exporting and importing firms employ more full-time permanent workers than their respective non-trading counterparts, even after controlling for firm-level characteristics such as firm-level sales, firm age, electricity costs, capital stock, ownership status and sector-level fixed effects. Exporters and importers are hence able to create a large number of jobs per firm. Second, importers have a higher share of non-production workers in their workforce than non-importers. This might reflect a broader management structure needed to organize production processes that rely on imported inputs. Third, both exporters and importers have a significantly higher share of women in their workforce than their respective non-trading counterparts. Especially firms engaged in trade hence appear to contribute to job creation for female workers. Finally, we find that exporting firms have a higher share of temporary workers in their workforce than non-exporters, suggesting that not all jobs created by exporters provide workers with a high degree of job security.

We also investigate the role of the quality of policies in shaping the relation between firms' trading status and employment. With a higher quality of a country's infrastructure, the employment premium of both exporting and importing is estimated to become larger, suggesting that a good infrastructure is particularly beneficial to firms engaged in these activities, allowing them to grow in terms of employment. At the same time, there is evidence that a better infrastructure is related to a smaller gap in the share of non-production workers between importing and non-importing firms. This is in line with the idea that less

workers are required to set up logistics networks for importing in countries with a better infrastructure, allowing importing firms to focus their workforce on production activities.

A better quality of gender-related policies are found to be related to higher shares of female workers within importing firms relative to non-importers. While exporters employ more temporary workers than non-exporters, a more developed rural sector narrows this gap between exporters and non-exporters. Importers have a higher share of temporary workers than non-importers, but only in countries in which the rural sector is poorly developed. It is often rural workers that are attracted by temporary employment opportunities in firms engaged in trade. A better developed rural sector will allow these workers to remain in rural areas, which might force firms to offer permanent as opposed to temporary contracts in order to remain sufficiently attractive as employers.

This paper indicates that the extent to which international trade is able to create decent jobs, also depends on the quality of policies adopted on other issues than trade. This highlights the importance that trade policies are accompanied with complementary policies that bring countries into a better position to reap benefits from trade-induced job creation. While this paper points to policies related to infrastructure, gender equality and rural sector development, this list is certainly not exhaustive. Future research needs to shed some more light on the particular channels that allow firms, including those that are engaged in trade and those that are not, to create decent jobs that help African workers to escape poverty, and be competitive on international markets at the same time.

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Appendix

Table A1: Surveys represented in the dataset

Angola	2006, 2010	Swaziland	2006
Benin	2009	Tanzania	2006, 2013
Botswana	2006, 2010	Togo	2009
Burkina Faso	2009	Tunisia	2013
Burundi	2006, 2014	Uganda	2006, 2013
Cameroon	2009	Zambia	2007, 2013
Cape Verde	2009	Zimbabwe	2011
Central African Republic	2011		
Chad	2009		
Congo, Republic of	2009		
Cote d'Ivoire	2009		
DRC	2006, 2010, 2013		
Djibouti	2013		
Egypt	2013		
Eritrea	2009		
Ethiopia	2011		
Gabon	2009		
Gambia	2006		
Ghana	2007, 2013		
Guinea	2006		
Guinea-Bissau	2006		
Kenya	2007, 2013		
Lesotho	2009		
Liberia	2009		
Madagascar	2009, 2013		
Malawi	2009, 2014		
Mali	2007, 2010		
Mauritania	2006, 2014		
Mauritius	2009		
Morocco	2013		
Mozambique	2007		
Namibia	2006, 2014		
Niger	2009		
Nigeria	2007, 2014		
Senegal	2007, 2014		
Rwanda	2006, 2011		
Sierra Leone	2009		
South Africa	2007		
South Sudan	2014		
Sudan	2014		

Table A2: Countries represented in the dataset by geographic region

Central Africa	East Africa	Southern Africa	West Africa
Cameroon	Burundi	Angola	Benin
CAR	Djibouti	Botswana	Burkina Faso
Chad	DRC	Lesotho	Cape Verde
Congo	Eritrea	Malawi	Cote d'Ivoire
Gabon	Ethiopia	Mauritius	Gambia
	Kenya	Mozambique	Ghana
North Africa	Madagascar	Namibia	Guinea
Egypt	Rwanda	South Africa	Guinea-Bissau
Mauritania	South Sudan	Swaziland	Liberia
Morocco	Tanzania	Zambia	Mali
Sudan	Uganda	Zimbabwe	Niger
Tunisia			Nigeria
			Senegal
			Sierra Leone
			Togo

Table A3: Countries represented in the dataset by REC membership(s)

AMU	COMESA	ECCAS	IGAD
Mauritania	Burundi	Angola	Djibouti
Morocco	Djibouti	Burundi	Eritrea
Tunisia	DRC	Cameroon	Ethiopia
	Egypt	CAR	Kenya
CEN-SAD	Eritrea	Chad	Sudan
Benin	Ethiopia	Congo	South Sudan
Burkina Faso	Kenya	DRC	Uganda
CAR	Madagascar	Gabon	
Chad	Malawi	Rwanda	SADC
Cote d'Ivoire	Mauritius		Angola
Djibouti	Rwanda	ECOWAS	Botswana
Egypt	Sudan	Benin	DRC
Eritrea	Swaziland	Burkina Faso	Lesotho
Gambia	Uganda	Cape Verde	Madagascar
Ghana	Zambia	Cote d'Ivoire	Malawi
Guinea-Bissau	Zimbabwe	Gambia	Mauritius
Mali		Ghana	Mozambique
Mauritania	EAC	Guinea	Namibia
Morocco	Burundi	Guinea-Bissau	South Africa
Niger	Kenya	Liberia	Swaziland
Nigeria	Rwanda	Mali	Tanzania
Senegal	South Sudan	Niger	Zambia
Sierra Leone	Tanzania	Nigeria	Zimbabwe
Sudan	Uganda	Senegal	
Togo		Sierra Leone	
Tunisia		Togo	