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# Foreign Ownership and Labour Markets in Sub-Saharan African Firms

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**Foreign Ownership and Labour Markets in Sub-Saharan African Firms**

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***Abstract***

*In this paper we examine whether foreign-owned firms pay higher wages and have higher levels of employment than domestically-owned firms in a cross-section of sub-Saharan African (SSA) firms using data from 19 SSA countries. We also test for the presence of wage spillovers, examining whether the wages offered by foreign-owned firms in an industry impact upon the wages paid by domestically-owned firms. Our results indicate that foreign-owned firms tend to pay higher average wages, employ more workers and generate positive human capital effects. This tends to be true for total employment and average wages for all workers as well as for blue- and white-collar workers separately. The effects of foreign ownership tend to be stronger for white-collar workers when considering wages and for blue-collar workers when considering employment. Our results also suggest that the presence of foreign-owned firms does not significantly impact upon the wages paid by domestically-owned firms however.*

***Keywords:*** *foreign ownership, employment, wage premium*
***JEL classification:*** *J21, J31, F23,*

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# Foreign ownership and labour markets in sub-Saharan African firms

## 1. Introduction

The affiliates of foreign firms are likely to differ from their domestic counterparts in a number of important ways. In particular, they are likely to possess proprietary technology and knowledge that provides them with a firm-specific advantage allowing them to compete with other MNCs and local firms, which presumably have superior knowledge of local markets, consumer preferences and business practices (Blomström and Kokko, 1998). These differences may include specialised knowledge about production, superior management and marketing capabilities, export contacts, and relationships with buyers and suppliers. The differences between foreign and domestically owned firms have led researchers to address the issues of whether foreign-owned firms perform better than their domestic counterparts, and whether the presence of foreign-owned firms has spillover effects on domestic firms. Without the above-mentioned differences between foreign and domestic firms it is difficult to envisage significant spillovers occurring from foreign to domestically-owned firms. Empirical results tend to support the view that foreign-owned firms perform better in terms of productivity than domestically-owned ones (see for example Harris and Robinson, 2003; Foster-McGregor et al., 2012), though the evidence of spillovers to domestically-owned firms is less strong (see Görg and Greenaway, 2004). In this paper we move away from considering the relationship between foreign-ownership and productivity to consider whether labour market outcomes differ between foreign- and domestically-owned firms. The main focus of the paper is on the question of whether foreign-owned firms employ more people and whether they pay higher wages than their domestic counterparts.

Lipsey et al. (2010) identify a number of arguments linking foreign-ownership to employment. Firstly, evidence suggests that foreign-owned firms are relatively efficient, and that they therefore may have access to foreign markets that domestically-owned firms do not. Secondly, they may also have wider contacts and knowledge of world markets and better access to financing. Both of these advantages could have a positive effect on employment levels by enhancing firm output. On the other hand, foreign-owned firms may tend to be more capital-intensive than domestically-owned firms, and more intensive in the use of imported intermediate products, so that an increase in their sales adds less to employment than a corresponding increase by domestically-owned firms. In the context of Sub-Saharan Africa (SSA) one motivation for inward FDI may also be the large pool of unskilled labour that is available, which would further suggest that the activities of foreign-owned firms in SSA may be relatively labour-intensive.

Little empirical evidence on the relationship between foreign-ownership and employment in developing countries exists. A number of studies consider the impact of foreign acquisition on employment in developed countries however. Girma and Görg (2004) find evidence of reduced employment growth in domestic plants taken over by foreigners in the electronics sector but not in the food sector in the UK, while Girma (2005) also using UK data finds no impact of foreign acquisitions on employment in acquired domestic firms. Huttenen (2007) finds that foreign acquisition has a negative effect on the share of highly educated workers among the plant's employees, again in the UK. Bandick and Karpaty (2007) consider the effects of foreign acquisition on employment in Swedish manufacturing and find some evidence to indicate that foreign acquisition leads to increased employment, particularly so for high-skilled labour. An exception that does consider a lesser-developed country is the study of Lipsey et al. (2010), which finds that employment growth in Indonesian firms was more rapid for those that were foreign-owned. Given the larger size of foreign-owned firms on average the effects on employment were pronounced.

With respect to foreign ownership and wages commentators have long suggested that foreign-owned firms pay lower wages, particularly in developing countries, as a means of reducing costs and increasing productivity. Empirical studies however provide strong evidence of a wage premium in foreign-owned firms (Aitken et al., 1996; Feliciano and Lipsey, 1999; Griffith and Simpson, 2003; Lipsey, 2004). Foreign firms pay higher wages in both developed and developing countries, and after controlling for firm specific characteristics. A small number of papers consider the impact of foreign-ownership on wages in SSA. Velde and Morrissey (2003) consider this relationship in five SSA countries and find that foreign-owned firms pay wages that are between 8 and 23 per cent higher than their domestic counterparts. Strobl and Thornton (2004) also find that foreign owned firms pay higher wages in the same five countries as considered by Velde and Morrissey (2003). Görg et al. (2002) consider the case of Ghana and show that foreign firms do pay higher wages, but only to those workers that have been in the firm some time and that have undergone on the job training. From this, they conclude that firm specific human capital accumulation is likely to explain the foreign wage premium in Ghana.

Arguments put forward to explain this positive association between foreign-ownership and wages include the arguments that foreign-owned firms possess specific advantages and assets that lead to them being more productive, that they are more capital-intensive, that they use the latest technology and that they invest more heavily in on the job training. Tandrayen et al. (2008) argue further that part of the wage effect of foreign-ownership may be due to export market knowledge advantages, which increase the probability of foreign firms exporting. To the extent that exporting increases firm-level performance and wages this export-propensity effect may impact upon wages. Using data for six SSA countries they find evidence to suggest that wages are higher in foreign-owned exporting firms than in foreign-owned non-exporting firms. Foreign-owned exporters are also found to pay more

than domestically-owned exporters. Interestingly, they find that foreign-owned firms exporting to other African countries pay more, whilst the premium of foreign-owned exporters exporting outside is generally insignificant, a result in line with those found by Milner and Tandrayen (2007).

A further issue related to foreign-ownership and wages is the question of whether foreign-owned firms bid up the wages paid by domestically-owned firms. If there are positive productivity spillovers and if some of this is due to increasing labour productivity, domestic firms will pay higher wages in competitive labour markets. Empirical estimation of these effects usually involves estimating the determinants of wages in domestic firms and including a measure of the foreign presence in the industry as a covariate (examples include Aitken et al., 1996; Lipsey and Sjöholm, 2001, Girma et al., 2001). The evidence to date on such wage spillovers is mixed. Görg and Greenaway (2004) in their survey discuss results from six studies of wage spillovers, with three studies finding negative spillovers and two reporting positive ones. The negative effects tended to be found in panel studies, while the positive ones were found in cross-section studies. Studies not covered in the survey of Görg and Greenaway provide stronger support for the presence of wage spillovers, as well as suggesting that the results obtained are not driven by the choice between panel or cross-section data. Figlio and Blonigen (2000) conclude that the effect of a large new foreign investment in South Carolina on aggregate wage levels was so large that it could not have been the result of the high wages in the foreign-owned plants only but must have involved spillovers to domestically-owned plants. Lipsey and Sjöholm (2004b) found evidence of wage spillovers in a cross-section of Indonesian manufacturing establishments. The results in this study were robust to a number of different definitions of what constitutes an industry and a labour market. Driffield and Girma (2003) use panel data on establishments in the UK electronics industry and find both intra-industry and intra-region wage spillovers from FDI on wages in general, the effects of which are larger for skilled workers. Girma et al. (2001) also using panel data from the UK find some evidence for wage spillovers. Interestingly, significant spillovers were found only when the effects were permitted to vary across industries, with wage spillovers found to be higher in industries where the productivity gap between foreign and domestic firms was lower.

In general, the results tend to suggest that spillovers are more likely to be found in developed rather than developing countries, possibly because the productivity gap between domestic and foreign firms in these countries is relatively small on average. This suggests that in some countries the gap between domestically and foreign-owned firms is too large for one group to influence the other. Another possibility mentioned by Lipsey and Sjöholm (2004) is that labour markets in some developing countries are too segmented for wages in one group to influence the other. They additionally mention that restrictive labour market laws may also limit the extent of wage spillovers.

In this paper we examine whether foreign-owned firms have higher levels of employment and pay higher wages in a cross-section of SSA firms using data from 19 SSA countries. While many of the above mentioned studies are able to use matched employer-employee datasets in their analysis, this option isn't open to us. Instead we use firm level data on total employment, employment by type, average wages and average wages by type to examine whether foreign-owned firms pay higher wages and employ more workers in this large cross-country firm-level dataset, controlling for firm characteristics and country and sector specific heterogeneity in our analysis. Using information on employment and wages by employer type we are able to address whether the wage and employment effects of foreign ownership impact more strongly on blue-collar (i.e. production workers) or white-collar workers (i.e. non-production workers). In addition to considering the wage and employment effects of foreign ownership we further examine whether additional labour market variables – such as expenditure on worker training – are also affected by foreign-ownership. In a final step we consider the issue of wage spillovers, examining whether the wages offered by foreign-owned firms in an industry impact upon the wages paid by domestically-owned firms. Our results indicate that foreign-owned firms tend to pay higher average wages and employ more workers conditional on other factors such as firm size and country and sector effects than domestically-owned firms. This tends to be true for total employment and average wages for all workers as well as for different sub-categories of labour. The wage effects of foreign ownership are found to be largest for white-collar workers, while the employment effect is largest for blue-collar workers. Foreign-owned firms also spend significantly more on labour training, suggesting that there may be positive human capital benefits from foreign-ownership. Our results also suggest that the presence of foreign-owned firms do not significantly impact upon the wages paid by domestically-owned firms.

The remainder of the paper is laid out as follows. Section 2 discusses the empirical methodology used; Section 3 describes the data and provides some initial descriptive statistics and results from initial comparison tests; Section 4 reports the main econometric results; Section 5 reports results from the tests for wage spillovers; and Section 6 concludes.

## 2. Methodology

In order to test for differences in labour market outcomes between foreign- and domestically-owned firms we employ a number of statistical methods. We begin by reporting results from a simple comparison of means test, comparing the mean levels of employment and average wages for domestic- and foreign-owned firms. Such a test concentrates on only one moment of the distribution however. As such, we also make use of the concept of first order stochastic dominance, which allows one to both compare and rank the entire distributions of – in our case – firm-level employment and wages. In particular, we make use of the non-parametric one- and two-sided Kolmogorov-Smirnov (KS tests), which are constructed as follows.

Let $F$ and $G$ be two cumulative distribution functions, for example, employment in foreign- and domestically-owned firms. Then first order stochastic dominance of $F$ relative to $G$ means that $F(z) - G(z)$ must be less or equal to zero for all values of $z$, with strict inequality for some $z$. This can be tested using the one-sided and two-sided Kolmogorov-Smirnov (KS) test. The two-sided KS statistic tests the hypothesis that both distributions are identical, and the null and alternative hypotheses can be expressed as:

$$\begin{aligned} H_0: F(z) - G(z) &= 0 \qquad \forall\, z \in \Re \\ H_1: F(z) - G(z) &\neq 0 \quad \text{for some } z \in \Re \end{aligned}$$

While the one-sided test can be formulated as:

$$\begin{aligned} H_0: F(z) - G(z) &\leq 0 \qquad \forall\, z \in \Re \\ H_1: F(z) - G(z) &> 0 \quad \text{for some } z \in \Re \end{aligned}$$

In order to conclude that $F$ stochastically dominates $G$ requires that one can reject the null hypothesis for the two-sided test, but not for the one-sided test.

The KS test statistic for the two- and one-sided tests are:

$$KS_2 = \sqrt{\frac{n.m}{N}} \max_{1 \leq i \leq N} \{F_n(z_i) - G_m(z_i)\}$$

$$KS_1 = \sqrt{\frac{n.m}{N}} \max_{1 \leq i \leq N} |F_n(z_i) - G_m(z_i)|$$

respectively, where $n$ and $m$ are the sample sizes from the empirical distributions of $F$ and $G$ respectively, and $N = n + m$.

We then turn to regression analysis which allows us to condition on other factors affecting performance. In particular, we report results from OLS regressions where we include in alternative specifications sector and country and sector-country fixed effects to control for country and sector specific heterogeneity in labour market performance. We estimate two similar regression models for our measures of wages and measures of employment.

In the case of the wage regressions our empirical specification is as follows:

$$Y_{ijk} = \beta_1 AGE_{ijk} + \beta_2 \ln SALES_{ijk} + \beta_3 \ln KL_{ijk} + \beta_4 HK_{ijk} + \beta_5 FEMSH_{ijk} + \beta_6 EXP_{ijk} + \beta_7 FOREIGN_{ijk} + \theta_j + \varphi_k + \varepsilon_{ijk} \quad (1)$$

where $Y$ is our measure of wages in firm $i$ in sector $j$ in country $k$, $AGE$ is firm age in years, $SALES$ is the total value of sales representing firm size, $KL$ is the capital labour ratio, $HK$ is a measure of human (the ratio of white to blue collar workers), $FEMSH$ is the share of females in total employment, $EXP$ is a dummy taking the value 1 if the firm is an exporter, $FOREIGN$ is a dummy taking the value one if the firm is foreign-owned, and $\theta_j$ and $\varphi_k$ are sector and country fixed effects. In various specifications these latter effects are replaced by sector-country fixed effects, $\tau_{ij}$. This model is estimated on the average wages of all workers as well as the average wages of white-collar and blue-collar workers separately. In

the wage regressions we further include information on the value of labour training to test whether part of the effect of foreign-ownership is due to higher levels of on the job training.

The specification for the employment regressions is very similar to equation (1), with the wage variables being replaced by number of employees. In additional specifications we include an interaction between the foreign ownership and the export status dummies to examine whether some of the wage and employment effects of foreign-ownership are due to export market advantages as suggested by Tandrayen et al. (2008).

In addition to estimating the models by OLS we also consider estimating the models using quantile regression (QR) methods. QR estimates the parameters of the regression model at different points on the (conditional) employment or wage distribution.[1] Estimation by QR has two main advantages over OLS for our purposes. Firstly, QR is robust with regard to outlying observations in the dependent variable. The quantile regression objective function is a weighted sum of absolute deviations, which gives a robust measure of location, so that the estimated coefficient vector is not sensitive to outlier observations on the dependent variable. In a sample of heterogeneous firms values of some variables are likely to be far away from others. These outliers could be due to reporting errors or to idiosyncratic events and can have a large influence on the coefficients when estimating the regression model by OLS. By using QR methods which are robust to outlying observations we are able to examine the sensitivity of our results to outliers. Secondly, QR allows us to estimate different parameters on the foreign-ownership dummy for under-achievers (i.e. those firms at the lower end of the conditional employment or wage distribution) and over-achievers (i.e. those firms at the upper end of the conditional employment or wage distribution). The method thus allows for non-linear effects of foreign ownership on wages and employment. In addition to these benefits, a particular form of QR – namely median regression or the Least Absolute Deviations (LAD) model – can be more efficient than mean regression estimators in the presence of heteroscedasticity, while when the error term is non-normal, QR estimators may be more efficient than least squares estimators.

One problem with the use of QR in a panel context arises when including a large number of fixed effects, as is the case when we include sector-dummy fixed effects. In particular, the inclusion of a large number of fixed effects leads to an incidental parameters problem; with a large number of cross-sectional units and a small number of observations for each cross-sectional unit the estimates of the fixed effects are likely to be poor. The poor quality of the estimates of the fixed effects causes the estimates of the main parameters of interest to be badly behaved. Koenker (2004) discusses approaches to deal with such problems, including a class of penalised quantile regression estimators, while Powell (2010) develops an unconditional quantile regression estimator that allows for the inclusion of fixed effects. Both of these approaches are computationally intensive to implement how-

[1] For an introduction to quantile regression models see Buchinsky (1998) and Koenker and Hallock (2001).

ever. Recently, Canay (2011) has introduced an alternative method of estimating quantile regression models with fixed effects that is easy to implement using standard software. The method is based upon the assumption that the fixed-effects in the model act like pure location shift effects, meaning that the fixed effects are constant across quantiles. Given this assumption, Canay proposes the following two-step estimator:

(i) Estimate the standard fixed effects regression at the conditional mean (i.e. the usual within transformation) and using the estimated parameters from this model construct estimates for the individual fixed effects as $\hat{\alpha}_i = \frac{\sum_{t=1}^{T}(Y_{it} - X_{it}'\hat{\beta}_\mu)}{T}$, where $\hat{\alpha}_i$ are the estimated fixed effects, $Y_{it}$ is the dependent variable, $X_{it}$ are the explanatory variables, and $\hat{\beta}_\mu$ are the estimated parameters from the conditional mean regression.

(ii) Define $\hat{Y}_{it} \equiv Y_{it} - \hat{\alpha}_i$ and estimate the quantile regression(s) using this newly defined variable as the dependent variable.

Canay (2011) shows that this estimator is consistent for large $T$. Canay (2011) also proposes a bootstrap procedure for estimating the variance-covariance matrix for this estimator. The bootstrap method is implemented by drawing with replacement a sample of size $NT$ and computing the two-step estimator as described above. Repeating this process a total of $B$ times the estimated bootstrapped variance-covariance matrix at quantile $\tau$ is constructed as:

$$\frac{1}{B}\sum_{j=1}^{B}\left(\hat{\beta}_j^*(\tau) - \bar{\beta}^*(\tau)\right)\left(\hat{\beta}_j^*(\tau) - \bar{\beta}^*(\tau)\right)'$$

where $\hat{\beta}_j^*(\tau)$ are the estimated parameters from the $j$th bootstrap and the $\tau$th quantile, and $\bar{\beta}^*(\tau) = \frac{1}{B}\sum_{j=1}^{B}\hat{\beta}_j^*(\tau)$.

We adapt this approach to our dataset, which has a country, sector and firm dimension. In our analysis we account for sector-country fixed effects and so follow step 1 above to construct estimates for the sector-country fixed effects and then use these to define the transformed dependent variable for use in step 2. Analogous to the arguments of Canay (2011) the estimator in this case would be consistent as the number of firms increase.[2]

## 3. Data and Descriptive Statistics

The data are drawn from the most recent UNIDO African Investor Survey (AIS) which was conducted over the period 2010-2011 and which surveys over 6,000 agricultural, manufac-

[2] For brevity we choose not to report results when including country and sector fixed effects separately. Given the relatively small number of fixed effects to be included in this case however, it is possible to include them using standard quantile regression methods. These results are available upon request and are qualitatively consistent with those when including country-sector fixed effects.

turing and services firms in 19 sub-Saharan African countries. In our analysis we consider the sample of manufacturing firms only, which gives us a maximum number of 2,808 observations. Of these firms 1,013 are foreign-owned and 1,795 are domestically owned.

The UNIDO dataset is careful to ensure that the interviewed firms accurately represent the countries' economies by drawing samples from sampling frames which contain all available information about business activities in the surveyed countries. Furthermore, the sample was drawn by stratifying the sampling frames along the dimensions of size (10-49, 50-99 or 100+ employees), ownership (domestic or foreign) and sector (ISIC Rev. 3.1 2-digit level), and selecting companies randomly within each stratum. The data were collected mainly via face-to-face interviews between the respondent and a UNIDO enumerator, along with drop and pick on some occasions. The respondents were usually senior managers of the firm or – in case of foreign ownership – the local subsidiary. The UNIDO dataset is unique in that it covers a relatively large number of African countries and a large number of firms. As far as we aware, the survey is the largest single survey for Africa in terms of both country and firm coverage. In addition, the survey is current with the survey having been conducted in 2010. The obvious drawbacks of the survey for our purposes are that it does not provide a matched employer-employee database and that it is a single cross-section with no time-series variation. Tables A1 and A2 in the appendix present a breakdown of the sample used by country and industry, as well as reporting the number of firms that are foreign-owned, exporters and foreign-owned exporters.

Table 1 reports mean comparison tests for a number of labour-related variables.[3] In particular, it reports comparison test results for different employment and wage measures, as well as relative wages and employment, and variables capturing investment in labour training. Using data from the AIS we are able to consider total employment and average wages of all workers as well as employment and wages of production workers, technical/supervisory/managerial staff (technicians), and clerical/administrative staff (clerks). These sub-categories are further aggregated into white-collar (i.e. technicians and clerks) and blue-collar (i.e. production) workers. [4] In addition, we use information on whether the firm engages in labour training, as well as the expenditure on labour training undertaken, the latter of which is also available by labour type. When calculating the mean comparison test statistics we account for sector and country heterogeneity in these labour market measures across sectors and countries by constructing a variable equal to the value of the performance measure minus the mean of the value of the performance measure for all firms in the same country and sector (i.e. we demean the data by country-sector). The test

[3] We also test for differences in the median of our performance measures across these groups using the Stata package '*cendif*'. The results are not reported for reasons of brevity, but are largely similar to those using the test of means.

[4] Blue-collar workers include production workers, while white-collar workers are technical/supervisory/managerial staff and clerical/administrative staff. Small discrepancies may arise due to different worker classes that were asked for in some cases.

statistics are then constructed using data on these demeaned values of the labour market variables.

Turning to the results in Table 1 we see that the results from the employment level variables are consistent across different labour types and indicate that the mean value of employment in foreign-owned firms is significantly larger than that in domestically-owned firms. This is true for total employment and for employment of production workers, technicians, clerks and the two broader categories of blue- and white-collar workers. When considering relative employment levels we find less evidence of significant differences between foreign- and domestically-owned firms, though there is some evidence to suggest that foreign-owned firms employ a relatively higher share of production workers, while domestically-owned firms employ a relatively higher share of clerks. In terms of the average wage variables we find that wages in foreign-owned firms tend to be significantly higher than those in domestically-owned firms. This is again true for average wages for all workers and for the different sub-categories of workers. We also find that the relative wage of white to blue collar workers is significantly higher in foreign-owned firms, suggesting that the skill premium is higher in foreign- than in domestically-owned firms. Finally, we find that the probability of offering training to workers is no higher in foreign-owned firms than in domestically-owned firms, but that the average amount spent on training for the different labour types is significantly higher in foreign-owned firms. Combined with the result that foreign-owned firms pay higher wages this last result is related to the results of Görg et al. (2002) who concluded that the higher wage offered by foreign-owned firms reflects differences in human capital due to on-the-job training. The higher wages offered by foreign-owned firms in our sample may reflect higher levels of firm-specific human capital. This is something we test and control for below.

The results in Table 1 suggest that there are important and significant differences in wages, employment and training offered between domestic- and foreign-owned firms. The results only concentrate on one moment of the distribution however – the mean. In Table 2 we report results from the non-parametric KS test, which considers all moments of the distribution. Once again, when constructing these test statistics we first demean the data by country-sector to account for differences in performance across sectors and countries. The results are found to be very similar to those found using the mean comparison test. In particular, we find using this non-parametric test that employment and wages of all types of workers in foreign-owned firms dominate those of domestically-owned firms, as does the amount spent by foreign-owned firms on labour training. We further find that the relative wage of white-collar workers is higher in foreign-owned firms, while foreign- (domestically)-owned firms employ a relatively high share of production workers (clerks).

Table 1

## Mean Comparison Test Results for Manufacturing Firms

| | Mean Values | | Alternative Hypothesis | | |
|---|---|---|---|---|---|
| | Domestic | Foreign | Difference in mean | Favourable to foreign | Favourable to domestic |
| *Employment Levels* | | | | | |
| Log Total Employment | -0.166 | 0.296 | 0.000*** | 0.000*** | 1.000 |
| Log Employment of Production Workers | -0.177 | 0.307 | 0.000*** | 0.000*** | 1.000 |
| Log Employment of Technicians | -0.133 | 0.229 | 0.000*** | 0.000*** | 1.000 |
| Log Employment of Clerks | -0.089 | 0.147 | 0.000*** | 0.000*** | 1.000 |
| Log Blue Collar Employment | -0.173 | 0.308 | 0.000*** | 0.000*** | 1.000 |
| Log White Collar Employment | -0.132 | 0.231 | 0.000*** | 0.000*** | 1.000 |
| *Relative Employment* | | | | | |
| Share of Production Workers in Total Employment | -0.0056 | 0.0099 | 0.056* | 0.028** | 0.972 |
| Share of Technicians in Total Employment | 0.0008 | -0.0015 | 0.642 | 0.679 | 0.321 |
| Share of Clerks in Total Employment | 0.0046 | -0.0081 | 0.006*** | 0.997 | 0.003*** |
| *Wage Levels* | | | | | |
| Average Wage | -0.101 | 0.172 | 0.000*** | 0.000*** | 1.000 |
| Average Wage of Production Workers | -0.040 | 0.070 | 0.000*** | 0.000*** | 1.000 |
| Average Wage of Technicians | -0.094 | 0.165 | 0.000*** | 0.000*** | 1.000 |
| Average Wage of Clerks | -0.067 | 0.113 | 0.000*** | 0.000*** | 1.000 |
| Average Wage of Blue Collar Workers | -0.044 | 0.078 | 0.000*** | 0.000*** | 1.000 |
| Average Wage of White Collar Workers | -0.084 | 0.150 | 0.000*** | 0.000*** | 1.000 |
| *Relative Wages* | | | | | |
| Relative Wage of White to Blue Collar | -0.125 | 0.221 | 0.000*** | 0.000*** | 1.000 |
| *Labour Training* | | | | | |
| Training Dummy | -0.004 | 0.008 | 0.493 | 0.247 | 0.754 |
| Log Training Expenditure (total) | -0.231 | 0.361 | 0.000*** | 0.000*** | 1.000 |
| Log Training Expenditure on Production Workers | -0.244 | 0.403 | 0.000*** | 0.000*** | 1.000 |
| Log Training Expenditure on Technical Workers | -0.300 | 0.442 | 0.000*** | 0.000*** | 1.000 |
| Log Training Expenditure on Clerks | -0.218 | 0.352 | 0.000*** | 0.000*** | 1.000 |
| Log Training Expenditure on Blue Collar Workers | -0.244 | 0.403 | 0.000*** | 0.000*** | 1.000 |
| Log Training Expenditure on White Collar Workers | -0.280 | 0.422 | 0.000*** | 0.000*** | 1.000 |

*Notes:* ***, ** and * indicate significance at the 1, 5, and 10 per cent levels.

Table 2

**KS Test Results for Manufacturing Firms**

| | Observations | | Null Hypothesis | | |
|---|---|---|---|---|---|
| | Domestic | Foreign | Combined | Favourable to Foreign | Favourable to Domestic |
| *Employment Levels* | | | | | |
| Log Total Employment | 1787 | 1003 | 0.000*** | 1.00 | 0.000*** |
| Log Employment of Production Workers | 1658 | 956 | 0.000*** | 1.00 | 0.000*** |
| Log Employment of Technicians | 1652 | 960 | 0.000*** | 1.00 | 0.000*** |
| Log Employment of Clerks | 1553 | 940 | 0.000*** | 0.99 | 0.000*** |
| Log Blue Collar Employment | 1722 | 971 | 0.000*** | 1.00 | 0.000*** |
| Log White Collar Employment | 1720 | 979 | 0.000*** | 0.99 | 0.000*** |
| *Relative Employment* | | | | | |
| Share of Production Workers in Total Employment | 1784 | 1002 | 0.03 | 0.198 | 0.014** |
| Share of Technicians in Total Employment | 1783 | 1003 | 0.332 | 0.167 | 0.272 |
| Share of Clerks in Total Employment | 1784 | 1003 | 0.000*** | 0.000*** | 0.201 |
| *Wage Levels* | | | | | |
| Average Wage | 1638 | 960 | 0.000*** | 1.000 | 0.000*** |
| Average Wage of Production Workers | 1639 | 933 | 0.000*** | 0.890 | 0.000*** |
| Average Wage of Technicians | 1627 | 930 | 0.000*** | 0.999 | 0.000*** |
| Average Wage of Clerks | 1546 | 914 | 0.000*** | 0.974 | 0.000*** |
| Average Wage of Blue Collar Workers | 1669 | 930 | 0.000*** | 0.914 | 0.000*** |
| Average Wage of White Collar Workers | 1660 | 931 | 0.000*** | 0.985 | 0.000*** |
| *Relative Wages* | | | | | |
| Relative Wage of White to Blue Collar | 1638 | 925 | 0.000*** | 0.992 | 0.000*** |
| *Labour Training* | | | | | |
| Training Dummy | 1763 | 999 | 0.044* | 0.022* | 0.023** |
| Log Training Expenditure (total) | 489 | 313 | 0.000*** | 0.975 | 0.000*** |
| Log Training Expenditure on Production Workers | 431 | 261 | 0.000*** | 0.993 | 0.000*** |
| Log Training Expenditure on Technical Workers | 382 | 259 | 0.000*** | 0.998 | 0.000*** |
| Log Training Expenditure on Clerks | 281 | 174 | 0.001*** | 0.976 | 0.000*** |
| Log Training Expenditure on Blue Collar Workers | 431 | 261 | 0.000*** | 0.993 | 0.000*** |
| Log Training Expenditure on White Collar Workers | 413 | 274 | 0.000*** | 0.983 | 0.000*** |

*Notes:* ***, ** and * indicate significance at the 1, 5, and 10 per cent levels.

## 4. Regression Results

In this section we report results from running the wage and employment regressions based on equation (1). The discussion is split into two subsections, the first discussing the impact of foreign-ownership on wages and the second its impact on employment levels.

### *4.1. Foreign-Ownership and Wages*

Table 3 reports results from estimating the main wage regressions using OLS. Rather than report results for each of the different employment types we concentrate on average wages for total employment (columns 1-3) and for the average wages of blue- (columns 4-6) and white-collar (columns 7-9) workers. In the table we report results when including no fixed effects, when including country and sector fixed effects and when including country-sector fixed effects. Concentrating initially on the foreign ownership dummy in Table 3 we observe that the coefficient on the foreign-ownership dummy is usually positive and significant across all specifications for average wages for all workers and for the measures of

average wages of blue- and white-collar workers (the exception being for blue-collar workers when including country-sector fixed effects). The results suggest that foreign-owned firms pay between 9.3 and 20.9 per cent higher wages than their domestic counterparts when considering average wages of all employees.[5] For blue-collar workers the wage premium is found to be between 6.8 and 16.9 per cent, while for white-collar workers the estimated wage premium is between 17.7 and 29.7 per cent. The results suggest therefore that the wage premium is higher for skilled relative to lesser-skilled workers, a result consistent with others in the literature (see for example Tandrayen et al., 2008).

Additional results in Table 3 indicate that the age of a firm usually has a positive and significant effect on the different measures of average wages. The coefficient on firm sales tends to be positive and is usually significant for blue- and white-collar workers, a result which provides some support for the positive size-wage effect that has been found in earlier literature (see for example Strobl and Thornton (2004) in the context of SSA countries). The capital-labour ratio and the measure of human capital also have a consistently positive and significant effect on average wages for all workers. The coefficients on the capital-labour ratio are usually insignificant for the blue- and white-collar workers separately however, while the coefficient on human capital in the case of white-collar wages is insignificant. The coefficient on the exporter variable tends to be insignificant, and in the cases where it is significant it is negative. This is different to much of the existing literature (see for example Wagner, 2007 and 2012), though the coefficient becomes positive and significant when the size variable is dropped from the regression specification. The coefficient on the female employment share is found to be significant in the case of blue-collar workers, with the coefficient having a negative sign, consistent with existing results from Mincerian wages regressions that find evidence of wage discrimination against females, but is usually insignificant otherwise.

To test the robustness of these results and to help understand the estimated effects of foreign ownership we extend these wage regressions in two ways. Firstly, we include a measure of spending on labour training to examine whether the extent of on-the-job human capital accumulation can help explain the foreign-ownership premium. If foreign firms engage in more labour training and if workers are paid their marginal products the level of labour training may help explain why we obtain a positive foreign-ownership premium. Secondly, we introduce additional dummies to distinguish between domestically-owned exporters and non-exporters and foreign-owned exporters and non-exporters. In particular, we include dummy variables for domestically-owned exporters, foreign-owned exporters and foreign-owned non-exporters. This allows us to test the hypothesis of Tandrayen et al. (2008) who suggest that one reason for the positive foreign-ownership premium is due to advantages that foreign firms have in export markets, which increases their propensity to

[5] The premia are calculated from the estimated coefficients on the trade dummies as $100(e^{\beta}-1)$, where $\beta$ is the estimated coefficient.

export. In terms of our dataset we find that while 50.5 per cent of foreign-owned firms are exporters, in the sample as a whole only 33.9 per cent are exporters. Results from including these two additional variables are reported in Tables 4 and 5 respectively.

When including the logged value of spending on labour training (Table 4) we find that the coefficients on both labour training and the foreign ownership dummy become insignificant for average wages of all workers and the average wages of blue-collar workers.[6] For white-collar workers however the results are different. In particular, we observe positive and significant coefficients on both the labour training and foreign ownership variables. The coefficients on the labour training variable indicate that a 1 per cent increase in labour training is associated with higher wages of white-collar workers of between 3 and 4.2 per cent, while the wage premium for white-collar workers in foreign-owned firms is between 17 and 22 per cent. The results thus suggest that the foreign-ownership premium for blue-collar workers disappears once we control for labour training, a results suggesting that the foreign-ownership premium is due entirely to the higher levels of on the job training and the higher firm-specific human capital levels of blue-collar workers in foreign-owned firms. For white-collar workers we find that labour training impacts positively upon the average wage of white-collar workers, but that this cannot explain the entire foreign-ownership wage premium.

Table 5 reports results when including dummies for domestically-owned exporters ($DOM\_EXP$), foreign-owned exporters ($FOR\_EXP$) and foreign-owned non-exporters ($FOR\_NONEXP$). Concentrating on the coefficients on these variables we find that the coefficients on the domestic exporter dummy have a variable sign and are generally insignificant. Domestically-owned exporters therefore are not found to pay higher wages than domestically-owned non-exporters. When considering average wages of all workers we find that foreign-owned non-exporters pay significantly higher wages than domestically-owned non-exporters, while foreign-owned exporters are not found to pay significantly more than domestically-owned non-exporters. Such results are in contrast to Tandrayen et al. (2008) therefore. For blue-collar workers we tend to find that both foreign-owned exporters and non-exporters pay more than domestically-owned non-exporters, though again the wage premium tends to be larger for foreign-owned non-exporters. In the case of white-collar workers the wage premium for foreign-owned exporters and non-exporters tend to be large (between 15 and 30 per cent) and significant, with few differences found between the exporting and non-exporting group. Overall, these results suggest that foreign-owned firms pay higher wages than domestically-owned firms, irrespective of whether they are exporters or not. Where differences in the wage premium between foreign-owned exporters and non-exporters are found they tend to favour non-exporters, which is in contrast to results of

[6] Note, that given that we include the level of labour training in logs we only include observations for which labour training is non-zero. When using the non-logged value of labour training and therefore include the large number of observations for which labour training is zero we obtain generally insignificant coefficients on the labour training variable.

Tandrayen et al. (2008). To the extent that wages are positively correlated with productivity the results are consistent with Vahter (2005) however, who examines the productivity of export-oriented versus domestic-oriented foreign firms. Using data for Estonia he finds that export-oriented foreign-owned firms have lower productivity than domestically-oriented foreign-owned firms.

Table 3

**Wage Regressions I**

| | (1) Wage | (2) Wage | (3) Wage | (4) Blue-collar wage | (5) Blue-collar wage | (6) Blue-collar wage | (7) White-collar wage | (8) White-collar wage | (9) White-collar wage |
|---|---|---|---|---|---|---|---|---|---|
| $AGE$ | 0.00364** | 0.00227* | 0.00299** | 0.00599*** | 0.00369*** | 0.00384*** | 0.00329*** | 0.00155 | 0.00148 |
| | (0.00144) | (0.00135) | (0.00143) | (0.00122) | (0.00111) | (0.00115) | (0.00114) | (0.00104) | (0.00109) |
| $\ln SALES$ | 0.210*** | 0.213*** | 0.205*** | 0.0702*** | 0.0753*** | 0.0803*** | 0.129*** | 0.127*** | 0.130*** |
| | (0.0163) | (0.0175) | (0.0190) | (0.00975) | (0.00957) | (0.0102) | (0.00973) | (0.00980) | (0.0111) |
| $\ln KL$ | 0.108*** | 0.118*** | 0.116*** | 0.0301** | 0.0120 | 0.0123 | -0.000198 | -0.00161 | -0.00372 |
| | (0.0182) | (0.0193) | (0.0214) | (0.0120) | (0.0117) | (0.0131) | (0.0129) | (0.0124) | (0.0138) |
| $HK$ | 0.00913*** | 0.00803*** | 0.00804*** | 0.00322*** | 0.00289*** | 0.00385*** | -0.000467 | -0.00101 | -0.000914 |
| | (0.00117) | (0.00115) | (0.00128) | (0.000985) | (0.000942) | (0.00103) | (0.000951) | (0.000903) | (0.00100) |
| $FEMSH$ | -0.00133 | -0.000171 | -0.000765 | -0.00517*** | -0.00228*** | -0.00222*** | -0.00356*** | -0.000639 | -0.000605 |
| | (0.00108) | (0.00124) | (0.00137) | (0.000775) | (0.000711) | (0.000833) | (0.000737) | (0.000737) | (0.000836) |
| $EXP$ | -0.0687 | -0.134** | -0.132** | 0.0356 | 0.0380 | 0.0191 | 0.0408 | 0.0448 | 0.0255 |
| | (0.0509) | (0.0571) | (0.0621) | (0.0418) | (0.0433) | (0.0470) | (0.0392) | (0.0411) | (0.0463) |
| $FOREIGN$ | 0.198*** | 0.0886* | 0.110** | 0.156*** | 0.0708* | 0.0655 | 0.260*** | 0.178*** | 0.163*** |
| | (0.0475) | (0.0485) | (0.0550) | (0.0388) | (0.0378) | (0.0423) | (0.0382) | (0.0367) | (0.0415) |
| Country F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Sector F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Country-Sector F.E. | No | No | Yes | No | No | Yes | No | No | Yes |
| Observations | 2,435 | 2,435 | 2,435 | 2,445 | 2,445 | 2,445 | 2,446 | 2,446 | 2,446 |
| R-squared | 0.271 | 0.367 | 0.432 | 0.120 | 0.274 | 0.363 | 0.180 | 0.352 | 0.424 |
| F-Statistic | 88.37*** | 33.04*** | 5.24*** | 39.85*** | 25.82*** | 4.11*** | 76.87*** | 39.62*** | 5.24*** |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4

**Wage Regressions II**

| | (1) Wage | (2) Wage | (3) Wage | (4) Blue-collar wage | (5) Blue-collar wage | (6) Blue-collar wage | (7) White-collar wage | (8) White-collar wage | (9) White-collar wage |
|---|---|---|---|---|---|---|---|---|---|
| $AGE$ | 0.00507* | 0.00414 | 0.00402 | 0.00610** | 0.00325 | 0.00309 | 0.00156 | -0.000480 | -0.00162 |
| | (0.00266) | (0.00280) | (0.00348) | (0.00236) | (0.00223) | (0.00254) | (0.00220) | (0.00196) | (0.00221) |
| $\ln SALES$ | 0.175*** | 0.167*** | 0.174*** | 0.0849*** | 0.0774*** | 0.0726*** | 0.123*** | 0.113*** | 0.104*** |
| | (0.0338) | (0.0368) | (0.0478) | (0.0172) | (0.0173) | (0.0227) | (0.0184) | (0.0186) | (0.0235) |
| $\ln KL$ | 0.157*** | 0.183*** | 0.179*** | 0.0244 | 0.0305 | 0.0233 | -0.0171 | -0.00980 | -0.0160 |
| | (0.0431) | (0.0482) | (0.0657) | (0.0209) | (0.0222) | (0.0277) | (0.0237) | (0.0239) | (0.0295) |
| $HK$ | 0.00730*** | 0.00664*** | 0.00643** | 0.00435** | 0.00313* | 0.00414* | -0.000588 | -0.00136 | -0.000595 |
| | (0.00196) | (0.00211) | (0.00280) | (0.00182) | (0.00189) | (0.00212) | (0.00170) | (0.00178) | (0.00209) |
| $FEMSH$ | -0.00397* | -0.00391 | -0.00541 | -0.00573*** | -0.00368** | -0.00467** | -0.00491*** | -0.00102 | -0.00277 |
| | (0.00232) | (0.00309) | (0.00392) | (0.00152) | (0.00153) | (0.00201) | (0.00149) | (0.00159) | (0.00208) |
| $EXP$ | -0.0322 | -0.260** | -0.287* | 0.112 | 0.106 | 0.113 | 0.178** | 0.131 | 0.122 |
| | (0.0894) | (0.119) | (0.150) | (0.0733) | (0.0883) | (0.1000) | (0.0698) | (0.0871) | (0.0998) |
| $FOREIGN$ | 0.125 | 0.0562 | 0.120 | 0.0431 | 0.0252 | 0.0559 | 0.160** | 0.165** | 0.200** |
| | (0.0928) | (0.0951) | (0.125) | (0.0726) | (0.0778) | (0.101) | (0.0699) | (0.0704) | (0.0913) |
| $TRAIN\ EXP$ | 0.00265 | 0.00523 | 0.00356 | 0.0449*** | 0.0269 | 0.0262 | 0.0421** | 0.0303* | 0.0387* |
| | (0.0322) | (0.0320) | (0.0405) | (0.0161) | (0.0166) | (0.0194) | (0.0174) | (0.0169) | (0.0198) |
| Country F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Sector F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Country-Sector F.E. | No | No | Yes | No | No | Yes | No | No | Yes |
| Observations | 741 | 741 | 741 | 748 | 748 | 748 | 752 | 752 | 752 |
| R-squared | 0.241 | 0.320 | 0.455 | 0.167 | 0.287 | 0.455 | 0.190 | 0.340 | 0.486 |
| F-Statistic | 24.12*** | 6.94*** | 2.09*** | 14.68*** | 5.98*** | 2.22*** | 22.14*** | 7.71*** | 2.53*** |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5

**Wage Regressions III**

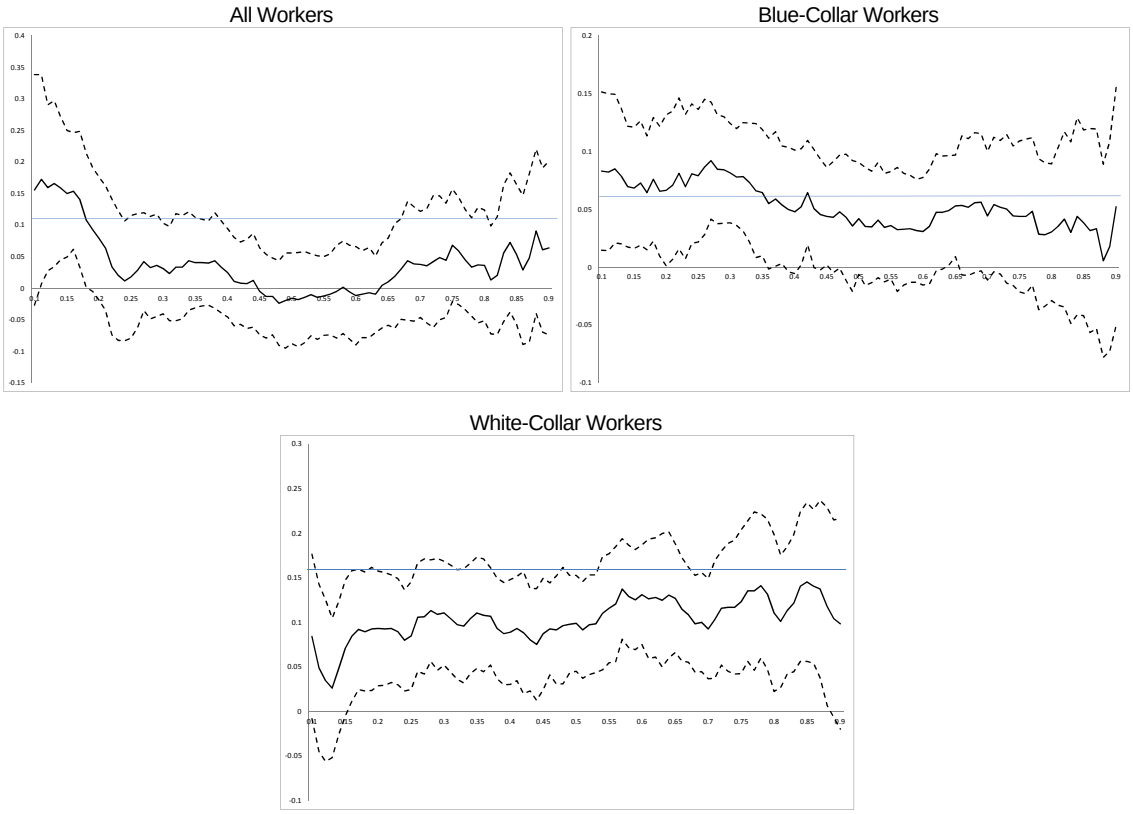
| | (1) Wage | (2) Wage | (3) Wage | (4) Blue-collar wage | (5) Blue-collar wage | (6) Blue-collar wage | (7) White-collar wage | (8) White-collar wage | (9) White-collar wage |
|---|---|---|---|---|---|---|---|---|---|
| $AGE$ | 0.00373*** | 0.00237* | 0.00307** | 0.00605*** | 0.00376*** | 0.00389*** | 0.00334*** | 0.00159 | 0.00151 |
| | (0.00144) | (0.00135) | (0.00142) | (0.00122) | (0.00110) | (0.00115) | (0.00114) | (0.00104) | (0.00108) |
| $\ln SALES$ | 0.208*** | 0.211*** | 0.204*** | 0.0693*** | 0.0743*** | 0.0794*** | 0.128*** | 0.126*** | 0.129*** |
| | (0.0162) | (0.0174) | (0.0189) | (0.00977) | (0.00959) | (0.0102) | (0.00975) | (0.00984) | (0.0111) |
| $\ln KL$ | 0.108*** | 0.117*** | 0.116*** | 0.0298** | 0.0113 | 0.0120 | -0.000386 | -0.00188 | -0.00376 |
| | (0.0183) | (0.0193) | (0.0215) | (0.0120) | (0.0116) | (0.0131) | (0.0128) | (0.0124) | (0.0138) |
| $HK$ | 0.00911*** | 0.00795*** | 0.00801*** | 0.00319*** | 0.00281*** | 0.00381*** | -0.000484 | -0.00105 | -0.000928 |
| | (0.00117) | (0.00114) | (0.00128) | (0.000985) | (0.000940) | (0.00102) | (0.000951) | (0.000902) | (0.00100) |
| $FEMSH$ | -0.00127 | -0.000126 | -0.000712 | -0.00512*** | -0.00223*** | -0.00217*** | -0.00352*** | -0.000608 | -0.000577 |
| | (0.00108) | (0.00123) | (0.00136) | (0.000774) | (0.000711) | (0.000835) | (0.000736) | (0.000739) | (0.000838) |
| $DOM\_EXP$ | 0.0210 | -0.0296 | -0.0382 | 0.0856 | 0.101* | 0.0761 | 0.0795 | 0.0815 | 0.0555 |
| | (0.0675) | (0.0706) | (0.0787) | (0.0605) | (0.0603) | (0.0676) | (0.0537) | (0.0547) | (0.0643) |
| $FOR\_EXP$ | 0.102 | -0.0770 | -0.0503 | 0.174*** | 0.0874* | 0.0658 | 0.288*** | 0.210*** | 0.179*** |
| | (0.0666) | (0.0763) | (0.0834) | (0.0472) | (0.0464) | (0.0521) | (0.0481) | (0.0480) | (0.0534) |
| $FOR\_NONEXP$ | 0.279*** | 0.183*** | 0.191*** | 0.202*** | 0.128*** | 0.115** | 0.295*** | 0.211*** | 0.189*** |
| | (0.0575) | (0.0583) | (0.0653) | (0.0462) | (0.0428) | (0.0463) | (0.0465) | (0.0428) | (0.0474) |
| Country F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Sector F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Country-Sector F.E. | No | No | Yes | No | No | Yes | No | No | Yes |
| Observations | 2,435 | 2,435 | 2,435 | 2,445 | 2,445 | 2,445 | 2,446 | 2,446 | 2,446 |
| R-squared | 0.272 | 0.368 | 0.433 | 0.121 | 0.276 | 0.364 | 0.181 | 0.353 | 0.424 |
| F-Statistic | 78.98*** | 32.72*** | 5.24*** | 35.10*** | 19.00*** | 4.11*** | 67.24*** | 38.88*** | 5.22*** |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As mentioned above, we also estimate the wage regressions using QR methods that allow for different effects of our explanatory variables on employment and which are robust to outlying observations on the dependent variable. We estimate the QR for all percentiles of the conditional distribution between the 10$^{th}$ and 90$^{th}$ percentiles. The model is estimated using the approach of Canay (2011), in which sector-country fixed effects are allowed for. The resulting set of parameter estimates for our main variable of interest – the foreign ownership dummy – is reported in Figure 1, with panels (a), (b) and (c) reporting the estimates of the impact of foreign-ownership on wages for all workers, blue-collar and white-collar workers respectively. In the figures the horizontal line represents the OLS coefficient from Table 3.

Figure 1

**Coefficients on the Foreign-Ownership Variable in the Wage Regression by Quantile**




The first thing to note from Figure 1 is that the coefficient at the median (i.e. when the percentile equals 0.5) tends to be much different – and much lower in particular – than the corresponding OLS estimate (-0.016 for QR versus 0.11 for OLS in the case of average wages for all workers). Indeed, the OLS estimates are found to be different to the QR estimate at most percentiles. The second thing to note is that the estimates vary considerably across the conditional wage distribution, especially in the case of all workers. The impact of foreign ownership tends to be largest at the lower and upper quantiles for all workers, with the coefficient tending to fall (rise) as we move to higher quantiles in the case of blue-

(white-) collar workers. In the case of average wages of all workers we find that the coefficients at the different quantiles tend to be insignificant. For blue-collar workers the coefficients are positive and significant at lower quantiles (i.e. in firms that pay low wages conditional on the explanatory variables), but become insignificant as we move to higher quantiles. In the case of white-collar workers the coefficient is usually positive and significant, being larger at higher quantiles. For blue-collar and white-collar workers in particular the QR results are largely consistent with those from the OLS model (despite differences across quantiles). Consistent with the OLS results the QR results also suggest that the wage premium is larger for white-collar than for blue-collar workers.

### *4.2. Foreign-Ownership and Employment*

Table 6 reports results from estimating the employment regression using OLS. Once again we concentrate on total employment and employment of blue- and white-collar workers. Turning initially to the foreign-ownership dummy we obtain consistently positive coefficients, which become significant when either country and sector, or country-sector fixed effects are included. In those cases where we obtain a significant coefficient the results indicate that foreign-owned firms employ between 10 and 13 per cent more workers. Employment of blue-collar workers is also found to be between 10 and 13 per cent higher for foreign-owned firms, with foreign-owned firms employing between 8 and 10 per cent more white-collar workers. The results suggest therefore that the employment effects of foreign-ownership are strongest for lower-skilled production workers, though the differences are not pronounced. This result is consistent with the view set out in the introduction, that one of the motivations for investing in SSA is the large pool of unskilled labour. Additional results reported in Table 6 indicate that firm age, firm size and the exporter dummy have a consistently positive and significant impact on total employment and employment of blue- and white-collar workers. That firm size is positively correlated with total employment is unsurprising, while a large empirical literature suggests that exporters perform better than non-exporters along a number of dimensions, including employment (see Wagner, 2007 and 2012). The coefficients on the capital-labour ratio are unsurprisingly negative and significant, while those on human capital are negative and significant for total and blue-collar employment, but positive and significant for white-collar employment.[7] The female share variable is small and positive in all cases, though not always significant.[8]

[7] The results on the human capital measure when looking at employment of blue- and white-collar workers separately should be treated with caution. Since the human capital variable is defined as the ratio of white- to blue-collar workers we would expect a positive (negative) effect of the human capital variable on employment of white- (blue-) collar workers when controlling for firm size.

[8] This latter result, when combined with the results from the wage regressions would tend to suggest that lower wages are associated with higher labour demand. This result may also be due to the fact that females tend to be employed in relatively labour-intensive sectors. While the average female employment share across all countries and sectors is 24.7 per cent, the highest average shares are found in textiles (39.1 per cent) and the manufacturing of wearing apparel (58.7 per cent).

As with the wage regressions we also included in alternative specifications the interaction between the foreign ownership dummy and the exporter dummy. It has been shown that exporters tend to be larger and employ more people. To the extent that foreign-owned firms are more likely to be exporters therefore, we may expect that some of the effect of foreign ownership works through exporting. When including this interaction term however the interaction term itself is never found to be significant, while the coefficients on the foreign ownership dummy are largely unaltered. Our results suggest that the higher employment of foreign-owned firms is not the result of their exporting activities therefore. Given the lack of significance of the interaction terms and for reasons for brevity these results are not reported.[9]

We also follow the same approach we adopted for the wage regressions and estimate the employment regressions using QR. The estimated coefficients on the foreign-ownership dummy are reported in Figure 2, which reports coefficients for total employment and blue- and white-collar employment separately. Once again, results from the QR differ considerably from the OLS results, both at the median and other quantiles. The coefficients at the median tend to be around -0.05 (though always insignificant), while the OLS coefficients are between 0.05 and 0.1. Across quantiles we observe that the coefficients on the foreign-ownership dummy tend to be negative for both total employment and for blue- and white-collar employment, with the coefficients generally found to be insignificant. Such results thus cast some doubt on the employment generating effects of foreign-ownership found when looking at the OLS results.

[9] They are available upon request however.

Table 6

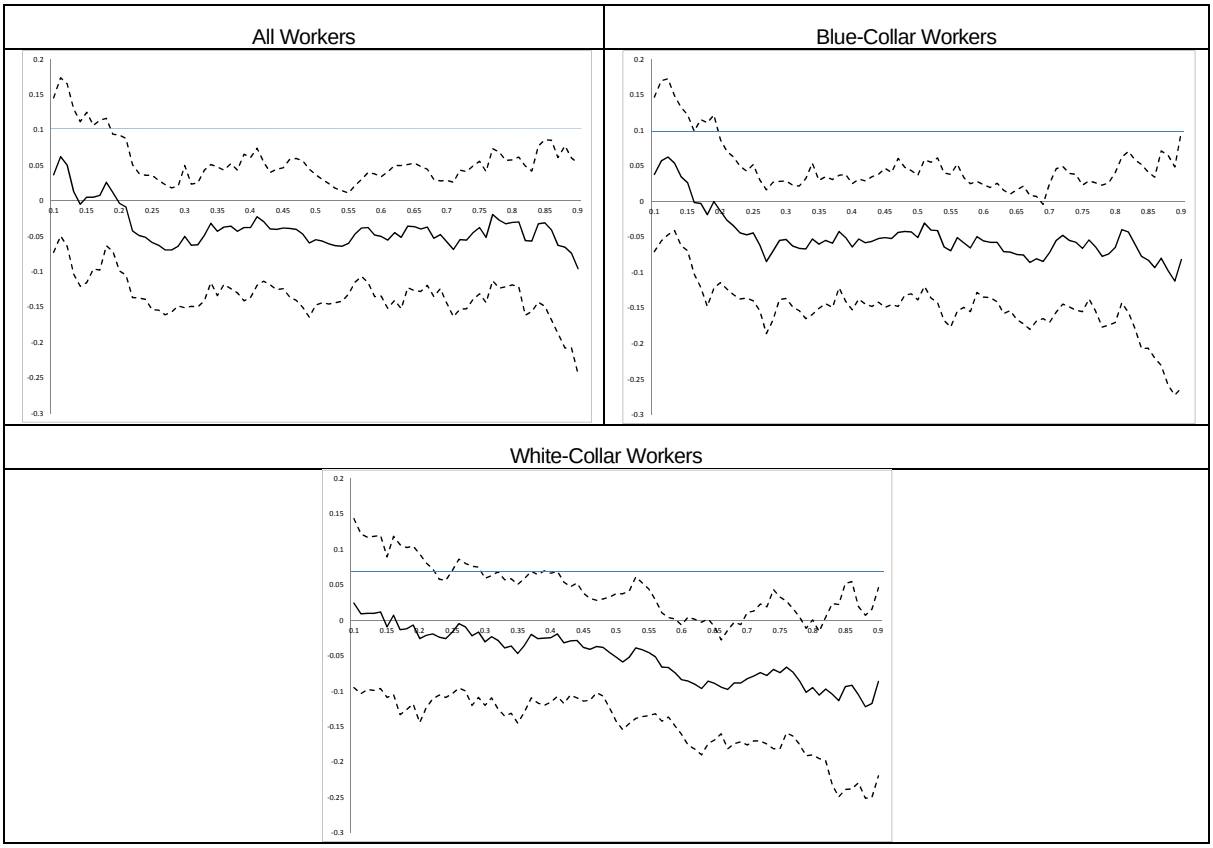
## Employment Regressions

| | (1) Total Employ-ment | (2) Total Employ-ment | (3) Total Employ-ment | (4) Blue-collar Em-ployment | (5) Blue-collar Em-ployment | (6) Blue-collar Em-ployment | (7) White-collar Employment | (8) White-collar Employment | (9) White-collar Employment |
|---|---|---|---|---|---|---|---|---|---|
| $AGE$ | 0.00887*** | 0.00890*** | 0.00952*** | 0.00810*** | 0.00825*** | 0.00872*** | 0.0102*** | 0.0103*** | 0.0108*** |
| | (0.00139) | (0.00132) | (0.00138) | (0.00142) | (0.00137) | (0.00143) | (0.00145) | (0.00137) | (0.00140) |
| ln $SALES$ | 0.444*** | 0.439*** | 0.433*** | 0.443*** | 0.437*** | 0.431*** | 0.420*** | 0.411*** | 0.402*** |
| | (0.0137) | (0.0140) | (0.0154) | (0.0139) | (0.0143) | (0.0158) | (0.0138) | (0.0140) | (0.0151) |
| ln $KL$ | -0.171*** | -0.169*** | -0.168*** | -0.167*** | -0.166*** | -0.165*** | -0.139*** | -0.142*** | -0.140*** |
| | (0.0140) | (0.0136) | (0.0146) | (0.0141) | (0.0137) | (0.0149) | (0.0138) | (0.0134) | (0.0143) |
| $HK$ | -0.0116*** | -0.0107*** | -0.0110*** | -0.0286*** | -0.0277*** | -0.0280*** | 0.0166*** | 0.0177*** | 0.0175*** |
| | (0.000871) | (0.000837) | (0.000924) | (0.00102) | (0.001000) | (0.00110) | (0.000942) | (0.000916) | (0.000999) |
| $FEMSH$ | 0.00458*** | 0.000387 | 0.000711 | 0.00515*** | 0.00127 | 0.00174* | 0.00419*** | 8.58e-05 | 0.000477 |
| | (0.000917) | (0.000919) | (0.00103) | (0.000925) | (0.000935) | (0.00105) | (0.000900) | (0.000914) | (0.00101) |
| $EXP$ | 0.228*** | 0.238*** | 0.229*** | 0.202*** | 0.219*** | 0.212*** | 0.186*** | 0.218*** | 0.198*** |
| | (0.0401) | (0.0410) | (0.0468) | (0.0405) | (0.0415) | (0.0472) | (0.0398) | (0.0407) | (0.0461) |
| $FOREIGN$ | 0.0415 | 0.126*** | 0.101** | 0.0354 | 0.120*** | 0.0955** | 0.0211 | 0.0953** | 0.0731* |
| | (0.0391) | (0.0383) | (0.0424) | (0.0398) | (0.0391) | (0.0430) | (0.0397) | (0.0388) | (0.0428) |
| Country F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Sector F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Country-Sector F.E. | No | No | Yes | No | No | Yes | No | No | Yes |
| Observations | 2,555 | 2,555 | 2,555 | 2,518 | 2,518 | 2,518 | 2,524 | 2,524 | 2,524 |
| R-squared | 0.617 | 0.680 | 0.713 | 0.656 | 0.710 | 0.740 | 0.588 | 0.658 | 0.696 |
| F-Statistic | 399.3*** | 90.49*** | 18.04*** | 493.0*** | 128.4*** | 20.45*** | 323.6*** | 78.46*** | 16.37*** |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Figure 2

**Coefficients on the Foreign-Ownership Variable in the Employment Regression by Quantile**




## 5. Wage Spillovers

In this section we test for the presence of wage spillovers, addressing whether the wages paid by foreign-owned firms impact upon the wages paid by domestically-owned firms. We do this in two ways. In an initial step we use information from the AIS which asks whether foreign presence has had a negative impact upon the domestic firm through the cost of skilled-labour.[10] We then include a dummy variable taking the value one if the firm reports being negatively affected ($NEGEFF$) by foreign presence in our wage regressions. A positive coefficient would indicate that those domestic firms that have indicated that foreign presence has had an impact upon hiring costs pay higher wages than other domestic firms, conditional on the other explanatory variables. In a second step we use information reported in the AIS on foreign-owned firms, calculating the average wage of foreign-owned firms in a sector in each country and include this in our wage regression ($FORWAGE$). A positive coefficient would indicate that domestically-owned firms pay higher wages in industries where foreign-owned firms also pay higher wages (after controlling for other vari-

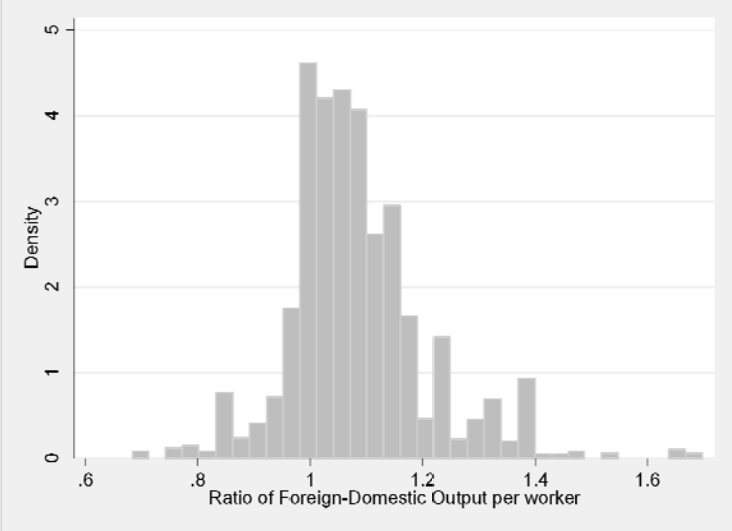
[10] Specifically, the question asks whether the effect of foreign presence on the cost of skilled labour has been (i) strongly negatively; (ii) slightly negative; (iii) no effect; (iv) slightly positive; (v) strongly positively. We create a dummy variable equal to one if the firm reports that foreign presence has been either strongly or slightly negative.

ables including firm size as well as sector and country-specific heterogeneity). When considering the wages of blue- and white-collar workers we include the average wage of blue- and white-collar workers in foreign-owned firms in the same sector ( , ) respectively. When including these variables we are not able to include country-sector fixed effects in our model since the average wage of foreign-owned firms is sector-country specific.

In a further step we allow for differences in the extent of wage spillovers across industries. In particular, we allow for the coefficient on the average wage of foreign-owned firms to differ depending upon whether the productivity gap between domestic- and foreign-owned firms in an industry is 'small' or 'large' ( and ). The productivity gap is measured as the ratio of the average of log of output per worker in foreign-owned firms in a particular industry and country to the average of log of output per worker in domestically-owned firms in a particular industry and country. Figure 3 reports a histogram of these ratios for the full sample. Based on this figure we impose a threshold of 1.2 to distinguish between industries with a large productivity gap (productivity gap greater than 1.2) and with a small productivity gap (productivity gap less than 1.2).[11]

Figure 3

**Histogram of Relative Productivity between Foreign- and Domestically-Owned Firms**




Results when including the dummy for firms that indicated that they have suffered negative effects of foreign presence on the cost of skilled labour are reported in Table 7. Results on the main control variables for the subsample of domestic firms are qualitatively similar to those for the full sample of both domestic- and foreign-owned firms. There are no significant coefficients on the dummy for negative effects of foreign presence however, either when we consider average wages of all labour or when we consider average wages of

[11] Results are not found to differ significantly when we use a threshold of 1.1 or 1.3.

blue- and white-collar workers separately. The results thus indicate that firms that indicated that foreign presence has had a negative effect on the cost of hiring (skilled labour) do not pay higher wages than other domestic firms (after controlling for other standard firm characteristics). Table 8 reports results when we include a measure of the average wage of foreign-owned firms in the same industry in the regression model. Results on the control variables are again largely similar, so we turn to the results on the foreign presence variable. Here we find no significant impact of wages in foreign-owned firms on domestic wages when we consider average wages for all workers, but when we split labour into blue and white collar workers we do find some evidence of a positive effect of wages in foreign-owned firms on both blue- and white-collar workers in domestically-owned firms. Such effects disappear however once we control for country and industry fixed-effects.

Table 7

**Wage Spillovers I**

| | (1) Wage | (2) Wage | (3) Wage | (4) Blue-collar wage | (5) Blue-collar wage | (6) Blue-collar wage | (7) White-collar wage | (8) White-collar wage | (9) White-collar wage |
|---|---|---|---|---|---|---|---|---|---|
| $AGE$ | 0.00361** | 0.00240 | 0.00298 | 0.00388** | 0.00195 | 0.00283* | 0.00169 | 0.000342 | 0.000713 |
| | (0.00181) | (0.00169) | (0.00192) | (0.00161) | (0.00142) | (0.00166) | (0.00144) | (0.00127) | (0.00146) |
| $\ln SALES$ | 0.185*** | 0.223*** | 0.223*** | 0.0526*** | 0.0788*** | 0.0865*** | 0.118*** | 0.138*** | 0.136*** |
| | (0.0197) | (0.0218) | (0.0255) | (0.0129) | (0.0132) | (0.0148) | (0.0119) | (0.0126) | (0.0149) |
| $\ln KL$ | 0.131*** | 0.130*** | 0.138*** | 0.0324* | 0.00569 | 0.00781 | 0.00772 | -0.00505 | -0.00338 |
| | (0.0229) | (0.0225) | (0.0250) | (0.0180) | (0.0165) | (0.0187) | (0.0176) | (0.0163) | (0.0185) |
| $HK$ | 0.00879*** | 0.00735*** | 0.00767*** | 0.00354*** | 0.00260** | 0.00401*** | 0.000525 | -0.000781 | -0.000754 |
| | (0.00142) | (0.00138) | (0.00156) | (0.00135) | (0.00124) | (0.00143) | (0.00120) | (0.00114) | (0.00131) |
| $FEMSH$ | -0.00100 | 0.000150 | -0.00110 | -0.00514*** | -0.00183** | -0.00220* | -0.00327*** | -0.000291 | -0.000626 |
| | (0.00138) | (0.00147) | (0.00172) | (0.00102) | (0.000891) | (0.00113) | (0.000918) | (0.000885) | (0.00108) |
| $EXP$ | 0.0460 | -0.0345 | -0.0867 | 0.123** | 0.111* | 0.0799 | 0.102* | 0.0657 | 0.0397 |
| | (0.0681) | (0.0772) | (0.0904) | (0.0618) | (0.0626) | (0.0746) | (0.0543) | (0.0569) | (0.0711) |
| $NEGEFF$ | -0.0418 | 0.00741 | 0.00571 | -0.0173 | 0.0300 | 0.0316 | -0.0344 | 0.0142 | -0.00426 |
| | (0.0690) | (0.0650) | (0.0728) | (0.0584) | (0.0532) | (0.0627) | (0.0526) | (0.0454) | (0.0524) |
| Country F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Sector F.E. | No | Yes | No | No | Yes | No | No | Yes | No |
| Country-Sector F.E. | No | No | Yes | No | No | Yes | No | No | Yes |
| Observations | 1,529 | 1,529 | 1,529 | 1,553 | 1,553 | 1,553 | 1,552 | 1,552 | 1,552 |
| R-squared | 0.229 | 0.361 | 0.428 | 0.073 | 0.260 | 0.347 | 0.116 | 0.326 | 0.399 |
| F-Statistic | 50.36*** | 18.21*** | 3.76*** | 13.42*** | 11.52*** | 2.80*** | 27.08*** | 15.83*** | 3.46*** |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8:

**Wage Spillovers II**

| | (1) Wage | (2) Wage | (3) Blue-collar wage | (4) Blue-collar wage | (5) White-collar wage | (6) White-collar wage |
|---|---|---|---|---|---|---|
| $AGE$ | 0.00338* | 0.00182 | 0.00381** | 0.00201 | 0.00229 | 0.000599 |
| | (0.00192) | (0.00180) | (0.00165) | (0.00150) | (0.00146) | (0.00136) |
| ln $SALES$ | 0.184*** | 0.224*** | 0.0612*** | 0.0881*** | 0.122*** | 0.140*** |
| | (0.0212) | (0.0233) | (0.0122) | (0.0133) | (0.0123) | (0.0135) |
| ln $KL$ | 0.128*** | 0.130*** | 0.0180 | 0.00360 | -0.00814 | -0.00766 |
| | (0.0245) | (0.0242) | (0.0199) | (0.0182) | (0.0195) | (0.0183) |
| $HK$ | 0.00932*** | 0.00775*** | 0.00442*** | 0.00360*** | 0.000123 | -0.000309 |
| | (0.00149) | (0.00142) | (0.00143) | (0.00134) | (0.00134) | (0.00127) |
| $FEMSH$ | -0.000834 | -6.55e-05 | -0.00450*** | -0.00146 | -0.00249*** | 7.38e-05 |
| | (0.00150) | (0.00159) | (0.00111) | (0.000985) | (0.000961) | (0.000997) |
| $EXP$ | 0.0724 | -0.0179 | 0.123** | 0.0757 | 0.0969* | 0.0670 |
| | (0.0720) | (0.0821) | (0.0619) | (0.0664) | (0.0582) | (0.0629) |
| $FORWAGE$ | 0.00135 | -0.0154 | | | | |
| | (0.0226) | (0.0248) | | | | |
| $FORWAGE\_BLUE$ | | | 0.150*** | 0.0355 | | |
| | | | (0.0299) | (0.0303) | | |
| $FORWAGE\_WHITE$ | | | | | 0.239*** | -0.00227 |
| | | | | | (0.0264) | (0.0327) |
| Country F.E. | No | Yes | No | Yes | No | Yes |
| Sector F.E. | No | Yes | No | Yes | No | Yes |
| Observations | 1,370 | 1,370 | 1,390 | 1,390 | 1,387 | 1,387 |
| R-squared | 0.226 | 0.359 | 0.109 | 0.261 | 0.175 | 0.320 |
| F-Statistic | 44.69*** | 16.84*** | 18.85*** | 10.78*** | 44.17*** | 14.33*** |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Finally, we report results when allowing the coefficient on wages in foreign-owned firms to differ depending upon the ratio of average output per worker in foreign-owned and domestically-owned firms in a particular industry. Results are reported in Table 9. When considering average wages for all workers we obtain a coefficient on the wage spillover variable that is positive and significant for industries where the productivity gap is relatively small and an insignificant coefficient in industries with a large productivity gap. When considering wages of blue and white collar workers separately we obtain significant coefficients on the wage spillover variable in industries with both a small and a large productivity gap, with the coefficients being somewhat larger (though not significantly so) in the low productivity gap industries. In all cases however, the significance of the coefficients disappears when country and industry fixed effects are included. This result thus suggests that when accounting for wage differences across industries and countries (possibly due to productivity gaps across industries and countries) that evidence in favour of wage spillovers disappears. Overall therefore, using the alternative indicators of wage spillovers and allowing for differences in the effects of wage spillovers across industries we find little evidence of wage spillovers from foreign- to domestic-firms in the same industry.

Table 9

**Wage Spillovers III**

| | (1) Wage | (2) Wage | (3) Blue-collar wage | (4) Blue-collar wage | (5) White-collar wage | (6) White-collar wage |
|---|---|---|---|---|---|---|
| $AGE$ | 0.00290 | 0.00180 | 0.00352** | 0.00204 | 0.00203 | 0.000537 |
| | (0.00191) | (0.00180) | (0.00167) | (0.00151) | (0.00147) | (0.00135) |
| ln $SALES$ | 0.177*** | 0.222*** | 0.0582*** | 0.0886*** | 0.119*** | 0.139*** |
| | (0.0219) | (0.0236) | (0.0122) | (0.0133) | (0.0124) | (0.0136) |
| ln $KL$ | 0.127*** | 0.130*** | 0.0177 | 0.00365 | -0.00839 | -0.00773 |
| | (0.0245) | (0.0243) | (0.0199) | (0.0182) | (0.0195) | (0.0184) |
| $HK$ | 0.00921*** | 0.00775*** | 0.00436*** | 0.00359*** | 7.68e-05 | -0.000294 |
| | (0.00149) | (0.00142) | (0.00144) | (0.00134) | (0.00134) | (0.00127) |
| $FEMSH$ | -0.00107 | -8.87e-05 | -0.00462*** | -0.00144 | -0.00260*** | 4.85e-05 |
| | (0.00152) | (0.00160) | (0.00110) | (0.000984) | (0.000952) | (0.000994) |
| $EXP$ | 0.0766 | -0.0198 | 0.123** | 0.0770 | 0.0965* | 0.0633 |
| | (0.0721) | (0.0820) | (0.0618) | (0.0660) | (0.0582) | (0.0625) |
| $FORWAGE\_LOW$ | 0.0179 | -0.00882 | 0.157*** | 0.0338 | 0.244*** | 0.00240 |
| | (0.0234) | (0.0259) | (0.0313) | (0.0315) | (0.0270) | (0.0335) |
| $FORWAGE\_HIGH$ | -0.00138 | -0.0158 | 0.141*** | 0.0385 | 0.231*** | -0.00850 |
| | (0.0230) | (0.0249) | (0.0294) | (0.0300) | (0.0265) | (0.0328) |
| Country F.E. | No | Yes | No | Yes | No | Yes |
| Sector F.E. | No | Yes | No | Yes | No | Yes |
| Observations | 1,370 | 1,370 | 1,390 | 1,390 | 1,387 | 1,387 |
| R-squared | 0.228 | 0.359 | 0.110 | 0.261 | 0.176 | 0.320 |
| F-Statistic | 40.95*** | 16.56*** | 16.49*** | 10.50*** | 38.58*** | 14.02*** |

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

## 6. Conclusions

This paper uses recent survey data at the firm-level to examine the impact of foreign-ownership on labour market outcomes in a relatively large sample of sub-Saharan African countries. Understanding the effects of foreign ownership on labour market outcomes is highly policy relevant. Policymakers often encourage inward FDI as a means of encouraging development through inward capital flows and through the transfer of technology and knowledge that can lead to productivity benefits for local firms. In addition, FDI may create earning and job opportunities that may not have been available to local workers otherwise. Such (potential) positive effects of inward FDI can be offset however if foreign-owned firms pay significantly lower wages, do not create employment opportunities, or push up costs – such as wages – for domestically-owned firms.

Our results indicate that foreign-owned firms tend to pay higher average wages conditional on other factors such as firm size and country and sector effects than domestically-owned firms. While this is true for all workers our regression results indicate that the wage premium is found to be higher for white-collar workers. This result is confirmed when looking at the relative wage of white- to blue-collar workers, which is also found to be higher for foreign-owned firms. In terms of the employment effects of foreign-ownership our results are more mixed. OLS results indicate that foreign-owned firms also employ more workers, but this evidence is weakened when we consider quantile regression methods. Results from our descriptive analysis and the non-parametric stochastic dominance tests tend to support the OLS results however. To the extent that foreign-owned firms employ more workers, our results indicate that these employment effects are felt more strongly for blue-collar workers. Additional results indicate that while foreign-owned firms are no more likely than domestic firms to engage in labour training, they do spend significantly more labour training, suggesting that there may be positive human capital benefits from foreign-ownership. Indeed, our results suggest that part – and in the case of blue-collar workers all – of the foreign-ownership wage premium is due to higher levels of on the job training in foreign-owned firms and the resulting higher levels of human capital.

Our results also indicate that there is little evidence of wage spillovers. The higher average wages paid by foreign-owned firms do not appear to push up the wages of domestically-owned firms. This result is not inconsistent with much of the existing empirical evidence, which is mixed at best. The results are consistent with the notion developed in the literature suggesting that spillovers are less likely to be found in developing countries because the productivity gap between domestic and foreign firms in these countries is relatively large implying that the gap between domestically and foreign-owned firms is too large for one group to influence the other.

Overall, the results paint a positive picture of foreign-ownership on labour markets in sub-Saharan Africa. A greater share of foreign ownership would be associated with higher av-

erage wages and possibly employment generation. Moreover, the presence of foreign-owned firms is not found to be associated with higher wages – and therefore higher costs – for domestically-owned firms, though it may lead to differences in wages between workers employed in the two types of firms. Based on our results increased foreign-ownership would also be expected to increase human capital levels through increased labour training and thus generate positive long-term development effects by increasing the quality of the labour pool. Such conclusions suggest that policy should be aimed at increasing the levels of inward investment into SSA, and that employment effects are likely to be greater if such investment is aimed at utilising the large pool of unskilled but trainable labour available. Despite this, there is the risk that in the short- to medium-term by paying higher wages – particularly to higher-skilled workers – foreign-owned firms may limit the availability of skilled workers for domestically-owned firms. In the longer-run perspective, an expanding domestic sector in need of skilled labour may have to offer an additional wage premium to attract these labour back from foreign firms.

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## Appendix

Table A1

**Breakdown of Manufacturing Firms by Country**

| Country | Frequency (Share in Total, %) | Foreign-Owned (Share, %) | Exporter (Share, %) | Foreign-Owned Exporter (Share, %) |
|---|---|---|---|---|
| Burkina Faso | 46 (1.64) | 14 (30.43) | 20 (43.48) | 7 (15.22) |
| Burundi | 42 (1.50) | 13 (30.95) | 16 (38.10) | 8 (19.05) |
| Cameroon | 78 (2.78) | 34 (43.59) | 35 (44.87) | 23 (29.49) |
| Cape Verde | 89 (3.17) | 22 (24.72) | 12 (13.48) | 6 (6.74) |
| Ethiopia | 360 (12.82) | 77 (21.39) | 70 (19.44) | 23 (6.39) |
| Ghana | 223 (7.94) | 86 (38.57) | 68 (30.49) | 36 (16.14) |
| Kenya | 313 (11.15) | 187 (59.74) | 195 (62.30) | 123 (39.30) |
| Lesotho | 72 (2.56) | 44 (61.11) | 47 (65.28) | 36 (50.00) |
| Madagascar | 99 (3.53) | 50 (50.51) | 65 (65.66) | 37 (37.37) |
| Malawi | 62 (2.21) | 17 (27.42) | 23 (37.10) | 10 (16.13) |
| Mali | 132 (4.70) | 28 (21.21) | 29 (21.97) | 14 (10.61) |
| Mozambique | 109 (3.88) | 56 (51.38) | 7 (6.42) | 5 (4.59) |
| Niger | 31 (1.10) | 7 (22.58) | 4 (12.90) | 1 (3.23) |
| Nigeria | 328 (11.68) | 77 (23.48) | 44 (13.41) | 14 (4.27) |
| Rwanda | 72 (2.56) | 20 (27.78) | 28 (38.89) | 13 (18.06) |
| Senegal | 87 (3.10) | 30 (34.48) | 49 (56.32) | 24 (27.59) |
| Tanzania | 242 (8.62) | 81 (33.47) | 75 (30.99) | 34 (14.05) |
| Uganda | 287 (10.22) | 131 (45.64) | 127 (44.25) | 86 (29.97) |
| Zambia | 136 (4.84) | 39 (26.68) | 38 (27.94) | 17 (12.50) |
| Total | 2,808 (100) | 1,013 | 952 | 512 |

*Notes:* Column 1 of the table reports the number of observations by country (with the share of the total number of firms in brackets). The remaining columns report the number of foreign-owned firms, exporting firms, and foreign-owned exporters in each country sample (along with the shares of these firm types in the total number of firms sampled in each country).

Table A2

## Breakdown of Manufacturing Firms by Industry

| Industry | Frequency (Share, %) | Foreign-Owned (Share, %) | Exporter (Share, %) | Foreign-Owned Exporter (Share, %) |
|---|---|---|---|---|
| Manufacture of food products and beverages | 597 (21.26) | 187 (3.32) | 207 (34.67) | 102 (17.09) |
| Manufacture of tobacco products | 20 (0.71) | 16 (80.00) | 14 (70.00) | 12 (60.00) |
| Manufacture of textiles | 109 (3.88) | 38 (34.86) | 53 (48.62) | 23 (21.10) |
| Manufacture of wearing apparel; dressing and dyeing of fur | 174 (6.20) | 79 (45.40) | 98 (56.32) | 67 (38.51) |
| Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear | 83 (2.96) | 26 (31.33) | 57 (68.67) | 19 (22.89) |
| Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials | 119 (4.24) | 31 (26.05) | 41 (34.45) | 17 (14.29) |
| Manufacture of paper and paper products | 89 (3.17) | 32 (35.96) | 32 (35.96) | 17 (19.10) |
| Publishing, printing and reproduction of recorded media | 233 (8.30) | 36 (15.45) | 35 (15.02) | 12 (5.15) |
| Manufacture of coke, refined petroleum products and nuclear fuel | 11 (0.39) | 8 (72.73) | 8 (72.73) | 8 (72.73) |
| Manufacture of chemicals and chemical products | 267 (9.51) | 123 (46.07) | 108 (40.45) | 65 (24.34) |
| Manufacture of rubber and plastics products | 252 (8.97) | 124 (49.21) | 91 (36.11) | 56 (22.22) |
| Manufacture of other non-metallic mineral products | 141 (5.02) | 46 (32.62) | 19 (13.48) | 13 (9.22) |
| Manufacture of basic metals | 73 (2.60) | 37 (50.68) | 25 (34.25) | 15 (20.55) |
| Manufacture of fabricated metal products, except machinery and equipment | 292 (10.40) | 98 (33.56) | 56 (19.18) | 33 (11.30) |
| Manufacture of machinery and equipment n.e.c. | 78 (2.78) | 26 (33.33) | 21 (26.92) | 8 (10.26) |
| Manufacture of office, accounting and computing machinery | 2 (0.07) | 2 (100) | 1 (50.00) | 1 (50.00) |
| Manufacture of electrical machinery and apparatus n.e.c. | 44 (1.57) | 24 (54.55) | 16 (36.36) | 10 (22.73) |
| Manufacture of radio, television and communication equipment and apparatus | 7 (0.25) | 6 (85.71) | 4 (57.14) | 4 (57.14) |
| Manufacture of medical, precision and optical instruments, watches and clocks | 13 (0.46) | 4 (30.77) | 5 (38.46) | 3 (23.08) |
| Manufacture of motor vehicles, trailers and semi-trailers | 26 (0.93) | 12 (46.15) | 11 (42.31) | 7 (26.92) |
| Manufacture of other transport equipment | 12 (0.43) | 5 (41.67) | 6 (50.00) | 3 (25.00) |
| Manufacture of furniture; manufacturing n.e.c. | 156 (5.56) | 47 (30.13) | 39 (25.00) | 19 (12.18) |
| Recycling | 10 (0.36) | 6 (60.00) | 5 (50.00) | 3 (30.00) |
| Total | 2,808 | 1,013 | 952 | 517 |

*Notes:* Column 1 of the table reports the number of observations by manufacturing sector (with the share of the total number of firms in brackets). The remaining columns report the number of foreign-owned firms, exporting firms, and foreign-owned exporters in each sector (along with the shares of these firm types in the total number of firms sampled in each sector).

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