

FOREIGN OWNERSHIP AND FIRM PERFORMANCE IN SUB-SAHARAN AFRICA

ABSTRACT

Our study investigates the effects of foreign ownership on firm performance with respect to (i) profitability (ii) productivity (iii) export intensity and (iv) skills acquisition in Sub-Saharan African (SSA) countries. This is particularly important given that in the last 3 decades, stock of FDI has increased over 20,000% in SSA countries. To achieve the objectives of this paper, we employed firm- and country-level data from the World Bank Enterprise Surveys and the World Bank Development Indicators respectively. Results of the least squares dummy variable (LSDV) and propensity score matching (PSM) estimations showed that foreign ownership was positively associated with higher levels of financial profitability, productivity, exports, and skilled labour acquisition. Policy implications were deduced from the findings.

Keywords: Sub-Saharan Africa; Firm Performance; Ownership Advantages, FDI, Exports

JEL Codes: D21, D22, F21, O55

1. INTRODUCTION

There has been an increase in the foreign ownership of firms globally and this has mainly been driven by the movement of capital through foreign direct investment and the foreign acquisition of domestic or national firms. Similar to other developing regions, Sub-Saharan Africa (SSA) has also recorded its share of global increase in foreign direct investment and subsequently, foreign ownership of firms (Nkiwane and Chipeta, 2019). Foreign firms have a choice between two types of entry into a host market. They may decide to establish a wholly owned subsidiary that competes with host domestic firms or simply acquire a share of an existing host domestic firm. These two types of entry mode then provide information on the extent to which any firm is associated with foreign ownership (Mattoo et al. 2004).

Data from the United Nations Conference on Trade and Development (UNCTAD) show that stock of foreign direct investment in SSA increased by approximately 20,000% in the last 3 decades (UNCTADstat, 2018). Although, while considerable debates exist in the literature as to the costs and benefits (see, Lipsey and Sjöholm, 2004; Cuervo-Cazurra and Genc, 2008; Wang et al. 2013; Shahbaz et al. 2015; Tang and Zhang, 2016) to this global trend, there is enough evidence to show regarding the positive impact of foreign ownership on the economic performance of host countries both at the macro and micro-levels (Nair-Reichert and Weinhold, 2001; Thompson, 2002; Chowdhury et al. 2006). The activities of foreign investors in the host economy can help strengthen the competitiveness of acquired firms through transfer of technology, skills development, international trade, marketing expertise, financial resources, etc. Furthermore, foreign owned firms would likely differ from their domestic counterparts because they possess these firm-specific ownership advantages which are not easily imitable in the host economy (Bandick and Karpaty, 2011).

The performance of foreign owned firms or affiliates can be attributed to the resources abundant in their home countries of origin. These abundant resources are therefore, significant determinants of firms' abilities to generate ownership advantages and thus, put them in positions of strong competitiveness in foreign markets. This line of argument has long been established within the standard FDI theory of the role of ownership advantages. However, while substantial empirical studies have investigated the determinants of firm performance in a much broader scope, an important gap in the empirical literature of foreign ownership and **firm performance in SSA exists in a detailed, precise and focused scope**. The study therefore, seeks to complement rather than substitute for these existing studies.

Therefore, this study contributes to the literature on foreign ownership and its impact on the economic performance of firms in Sub-Saharan Africa. Using firm level data necessarily implies a narrower focus of analysis and thus, the focus of this paper is on examining the links between foreign ownership of firms and their performance (including productivity, profitability, exporting, and skilled labour acquisition). As such it looks at those effects that impact directly on the firm's own performance and does not seek to overlap with the existing literature on spillovers arising from inward foreign direct investment. Studies of this type do exist for a number of countries (see, Douma et al. 2006; Aydin et al. 2007; Gelübcke and Philipp, 2013; Wang and Wang, 2015; Phung and Mishra, 2016; Hamdan, 2018; Carney et al. 2019; Lindemanis et al. 2019) but to our understanding no study has focused specifically on SSA. Also, it is evident that a developing region like SSA suffers from poor institutional quality, weakened business environment, and high cost of business transactions (Carney et al. 2019). This can erode the ownership advantages associated with foreignness of a firm. To this effect, our research question is simple: do firms associated with foreign ownership perform better irrespective of the quality of business environment and institutions? Thus, investigating the effect of foreign ownership on the performance of firms will further provide justification

of the importance of the ownership advantages of firms regardless of the institutional quality or business environment that they operate in and the costs associated with investment activities outside of their home market. Therefore, findings of this paper can help sustain the scholarly argument of the superior competitive advantages of foreign owned firms in compensating for the disadvantages arising from a business environment characterised by poor quality of institutions. The insight from the findings of this paper will deepen the understanding of the advantages associated with foreign ownership. In addition, specifically focusing our analysis on SSA will reveal if the increasing presence of foreign ownership of firms in the region is an activity that will be sustained given the links between the performance of firms and their survival. This definitely presents an interesting line for scholarly research.

To achieve the objectives of the paper, we used the World Bank Enterprise Survey data on a sample of 5,937 firms covering the period 2011 – 2016 and across nine SSA countries for which data were available. Findings of the least square dummy variable (LSDV) and propensity score matching (PSM) estimations showed that foreign ownership was positively related to the different measures of firm economic performance. Foreign owned firms were more productive and profitable in comparison to their domestic countries. Foreign firms were also more likely to employ workers with higher levels of education. Similarly, they are also more likely to provide training to their workers. With respect to exports, foreign owned firms were also more export intensive.

The remainder of the paper is structured as follows. Section 2 presents the review of literature in terms of the theoretical framework, and empirical literature. The hypotheses were also presented in this section. Section 3 presents an overview of the data and sample of countries. Section 4 will then discuss and specify the estimating techniques. Section 5 presents and discusses the regression results. Section 6 will conclude the paper and also deduce policy implications.

2. REVIEW of LITERATURE

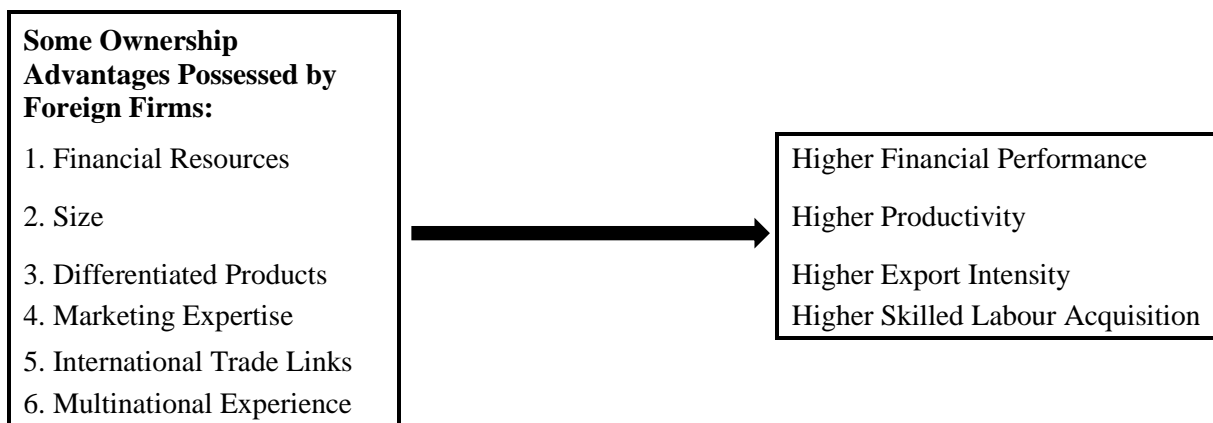
2.1 Theoretical Framework

The industrial organisation theory of FDI proposed the first economic analysis of the reason behind the decision of firms to investment outside of their home market. Foreign firms in all likelihood will be faced with disadvantages when they compete in foreign markets. However, their decision to pursue investments abroad is anchored on the specific characteristics and advantages they possess (ownership advantages) over local firms (Hymer 1960; Kindleberger 1969; Hymer, 1976). Similarly, the performance of foreign owned firms can be attributed to the resources abundant in their home countries of origin. These abundant resources are therefore, significant determinants of firms' abilities to generate ownership advantages and put them in positions of strong competitiveness in foreign markets (Nachum and Rolle, 1999). Thus, to successfully compete in foreign markets, firms need to possess superior assets and skills that allow them economic rents that are enough to offset the costs of servicing these markets as well as, those encountered by indigenous producers. These are known as ownership advantages (Hymer, 1960; Dunning, 1977; Dunning, 1988) (sometimes called competitive or monopolistic advantages) and thus, give firms the ability to enter and compete in foreign markets either through joint ventures or outright foreign direct investment. The argument is that ownership advantages embodied in foreign firms would enable them to be more competitive with respect to maximising their returns on assets, skill acquisition, and other related productive activities. These ownership advantages can either be in the form of financial resources, size, differentiated products, marketing expertise, international trade links, or multinational experience (Agarwal and Ramaswami, 1992).

These advantages are significant determinant drivers in the performance variations of firms because they allow for greater bargaining power (with respect to buyers, suppliers, and skills

acquisition), stronger market positions, economies of scale, and conditions necessary for the development of a strong customer base (Hawawini et al. 2003; Makhija, 2003). Therefore, foreign firms are expected to enjoy a higher degree of financial performance, productivity, exports, and the ability to attract and retain skilled labour. Thus, domestic owned firms would find it very difficult to compete with foreign owned firms because they often sustain competitive positions through their valuable, rare, and inimitability resources (Lundan, 2010). More so, this will particularly be the case for developing markets such as those found in Sub-Saharan Africa.

Schematic Representation of the Benefits of Ownership Advantages



2.2 Empirical Literature

(a) Foreign Ownership and Financial Performance

As presented in the previous section, the foreign direct investment literature claims that foreign owned firms are often associated with **better performance** over host market firms (Halkos and Tzeremes, 2007). Using data from 225 banks in a sample of transition countries and estimating with stochastic frontier procedures over the period 1996-2000, Bonin et al. (2005) found that foreign owned banks were more profit and cost efficient. They attributed their findings to the transfer of technology and know-how from the foreign investors. Alfaro and Chen (2012) also

found that foreign subsidiaries recorded better sales growth than their domestic counterparts and this was strongest when host country credit conditions worsened (financial crisis years). Their study was based on propensity score matching estimations and for a sample of 43,513 firms in 53 countries over the period 2005-2008. According to their study, financial linkages with home country played critical roles in explaining these differences in performance. Douma et al. (2006) employed OLS regression with industry dummies (to control for industry specific factors) in their investigation of the relationship between foreign ownership and financial performance in more than 1,000 listed firms in India. Their finding showed a positive relationship between foreign ownership and financial performance and this was attributed to the financial contribution, and managerial and technical expertise that are associated with foreign corporations. This result is also similar to that of Zeitun and Gang (2007) in their investigation of the relationship between ownership structure and firm performance in 59 publicly listed firms in Jordan over the period 1989-2002. Findings of their regression analysis showed that foreign ownership reduced firms' probability of default through the ability of foreign shareholder to exercise better ownership control of the firms.

Hypothesis 1: Foreign ownership is positively related to higher financial performance

(b) Foreign Ownership and Labour Productivity

It has been established in the MNE literature that foreign ownership comes with the transfer of knowledge and expertise and thus, might display higher productivity levels when compared to domestic firms (Gaviria, 2002; Benfratello and Sembenelli, 2006). To provide empirical support for this, the OLS and random effects estimations by Claessens and Djankov (1999) showed that foreign ownership was associated with improved labour productivity in a sample of Czech firms over a period of 5 years. Their finding was as a result of the mass-privatisation that conferred control of firms to foreign owners as this would have enabled firms to maximise

their ownership advantages. Gelubcke (2013) in their study of the relationship between foreign ownership and different performance measures showed that labour productivity was higher in foreign owned firms. The study employed generalised linear model on a sample of German manufacturing firms in 2007 and 2008. Foreign owned firms in Germany were on average, larger by about 200 employees and achieved superior annual labour productivity of approximately 20,000 EUR. The wage premium associated with ownership advantages was used in justifying the result. Zhang et al. (2003) amongst other findings, showed that foreign firms had higher productive efficiency than domestic owned firms. Their study was based on a sample of 8,341 Chinese Industrial firms and the stochastic frontier estimations. The rationale that foreign firms have higher R&D intensity was used in justifying their findings. Additional support for the positive impact of foreign ownership on productivity was by Dimelis and Louri (2002) in their quantile regression estimations of 4,056 manufacturing firms operating in Greece.

Hypothesis 2: Foreign ownership is positively related to higher labour productivity

(c) Foreign Ownership and Export Intensity

Studies have shown that foreign ownership provides firms with the advantages of global expansion and the internationalisation of their host market firms through export activities. Thus, as a result of the ownership advantages of foreign firms, foreign investors may provide resources needed for international activities, and access to their contractual networks (Filatotchev et al. 2008). Raff and Wagner (2014) investigated the effects of foreign ownership on firms' export intensity for a sample of firms operating in Germany. Results of the OLS and robust MM-estimator showed that foreign owned firms were more export intensive even after controlling for size and productivity. Foreign owned firms exported about 39% more goods compared to their domestic counterparts. Boddin et al. (2017) in their study of foreign

ownership and export and/or import intensities, employed firm-level data on a sample of manufacturing firms in developing countries from 2002-2006. Findings of the propensity score matching technique showed that the propensity of foreign owned to export is 17.6% in comparison to domestic owned firms. Support for this result was provided using the ownership advantages of foreign firms which is their network of international trade links; including their ability in helping firms to intermediate foreign trade. Bykova and Lopez-Iturriaga (2018) examined the export activity of 500 manufacturing firms in Russia over the period 2004-2014. The findings of their GMM estimates showed that foreign ownership had a positive impact on the link between exports and firm performance. This was attributed to the ownership advantages of foreign firms with respect to advanced technologies and financial resources. Filatotchev et al. (2008) investigated the relationship between ownership structure and export intensity in 434 firms in a sample of Central and Eastern European Countries. Amongst other findings, the OLS regression estimations showed that foreign ownership is positively associated with export intensity. The foreign equity and foreign control were identified as the complementary factors responsible for the increased export intensity.

Hypothesis 3: Foreign ownership is positively related to higher export propensity at the firm level

(d) Foreign Ownership and Skills Acquisition

Foreign owned firms are known to require workers with better skills and are also more likely to be involved in the training and development of their workers. This is because the firm-specific or ownership advantages they possess, allow them to be more productive and to pay higher wages. The latter of which is particularly important in attracting workers with steeper wages profiles and skills (Gorg, et al. 2007; Huttunen, 2007). Hijzen et al. (2013) investigated the relationship between foreign ownership, wages and employment in a sample of developed

and emerging economies. Results of the propensity score matching procedure showed amongst other findings that foreign ownership had a positive impact on employment growth in high-skill jobs due to the ability of the foreign takeover in creating high-wage jobs. Using a number of econometric techniques that include the difference-in-difference approach and propensity score matching, Bandick and Karpaty (2011) showed a positive effect of foreign ownership and demand for skilled labour. Ownership advantages such as technological advancement of foreign owned firms was argued to be responsible for the positive effect. The analysis was based on a sample of manufacturing firms in Sweden and over the period 1993-2002. Koch and Smolka (2019) in their study of the impact of foreign ownership on worker skills found that foreign owned firms acquired more high-skilled workers and also provided worker training. Their study was based on firm-level data from Spain and estimates from difference-in-difference approach with a propensity score weighting. Empirical evidence by Alili (2018) also showed a positive and significant impact of foreign ownership on incidence and intensity of training of workers. Their empirical investigation employed Probit, Tobit, and Craggit techniques on firm-level data in Transition Economies covering the period 2002-2009.

Hypothesis 4: foreign owned firms are more likely to employ workers with more education (skilled workers) and to provide training.

3. DATA

3.1 Firm Level Data

Firm level data for this study were taken from World Bank Enterprise surveys (WBES) for the following countries and years: Democratic Republic of the Congo (2013), Ghana (2013), Kenya (2013), Nigeria (2014), Rwanda (2011), Tanzania (2013), Uganda (2013), Zambia

(2013) and Zimbabwe (2016). There we cross-sectional data collected across different years for which data were available given that the WBES does not report annual data for all countries. In addition, due to data gaps across the outcome and response variables, some observations were lost and thus, the total sample for the analysis provided a cross-section of 5937 firms for the entire number of years under review. The WBES collects sectoral data (manufacturing, retailing, and services) across all regions in the world and covering most countries. The surveying technique employed by the WBES uses standardised instrument, consistent sampling technology and carried out in a way that minimises error and thus, is able to produce data that are comparable across different regions and countries (WBES, 2011).

Firm level variables were all collected from the WBES and divided into two groups – outcome (dependent) variables and treatment (explanatory) variables. Outcome variables captured different aspects of firm performance. These comprised: (a) *Productivity* (log of firm's output per worker); (b) *Profitability* (log of firm's profit per worker); (c) *Export* (exports as a % of the firm's total sales); (d) *Licensing* (whether or not the firm licensed foreign technology – 0,1); (e) *Training* (whether or not the firm provided training – 0,1); (f) *Edyears* (the average number of years of educations of the firm's employees). The variables used as treatment (explanatory variables) comprised the following: (a) *Foreign* (the percentage foreign ownership of the firm) and dummy (0,1) variables were also derived – *foreign1* (1 if the firm had any foreign ownership) and *foreign2* (1 if the firm was 50% or more foreign owned); (b) *Empl* (the number of full-time employees, used as a measure of firm size); (c) *Agefirm* (the age of the firm in years); (d) *Mgrexp* (the number of years of experience of the firm's top manager); (e) *Infra* (a measure of the firm's perceived level of difficulty with infrastructure, ranked from 0 to 4); (f) *Bureau* (a measure of the firm's perceived level of difficulty with government bureaucracy ranked from 0 to 4); (g) *Loan* (whether or not the firm had received loan financing – 0,1); (h) *Newprod* (0,1 – 1 if the firm introduced a new product in the past 3 years); (i)

Newprocess (0,1 – 1 if the firm introduced a new production process in the past 3 years); (j) *Newmgt* (0,1 – 1 if the firm introduced a new management processes in the past 3 years); (k) *Poored* (a measure of the firm’s perceived level of difficulty with the standards or education of its work force, ranked from 0 to 4). For consistency and comparability, where any of the variables were measured in monetary values these were converted to US dollars at the official exchange rate.

3.2 Country Level Data

To capture country level differences the study included a number of country level variables. This is important given that these countries in our sample are not homogeneous. The country level data were taken from the World Development Indicators database. The variables comprised: (a) *Gdpcap* (GDP per capita in US \$); (b) *Minrents* (mineral rents as a % of GDP); (c) *Rural* (rural population as a % of the total). The time periods of the country level and firm level data were consistent for each country in our sample. A summary of the studies that have used both the firm level and country level control variables in their study of firm performance are presented in table ****

3.3 Data Summary by Country

Table 1 provides a summary of the enterprise data by country. It shows that the mean percentage foreign ownership across the full sample is just under 10% but there is considerable variation between one country and another (from a mean of 2.5% for Tanzania to 24.1% for Zambia). The table also shows that the mean number of employees across the sample is just under 58 employees, just a little above the survey’s upper limit for a firm to be defined as “small”. Again, this varies between countries. Across the sample the mean share of exports in total sales is just under 12%. Yet again this varies across countries from a mean of 3.4% (Congo and Rwanda) to Kenya (just under 23%).

Table 2 provides a similar summary by sector. The mean foreign ownership varies from as low as 4.2% for the garments sector and to as high as 70% for recycling. A number of sectors are characterised by a mean firm size in excess of 100 employees (defined as “large” by the survey). These include tobacco, textiles, petroleum refining and chemicals. Sectors with a small mean firm size include retail, wholesale, motor vehicle repair and information technology services. Sectors for which exports are typically a higher proportion of total sales include tobacco, leather and basic metals. Sectors for which exports typically represent a low share of total sales include construction, motor vehicle repair and retail.

4. METHODOLOGY

The methodological approach was intended to test whether or not foreign ownership has a statistically significant effect on each of four different firm level performance variables: productivity (log of output per worker), profitability (log of profit per worker), export propensity (exports as a percentage of total sales) and whether or not the firm licensed foreign technology.

4.1 Regression Models

For the first three performance (dependent) variables a common least squares dummy variable (LSDV) specification of the following form was used:

$$Y = \alpha F + \beta X + \gamma D + u \quad (1)$$

Y is the relevant performance indicator, F the foreign ownership variable, X a matrix of observations of k control variables, D a matrix of dummy variables by both sector and firm size class and u a well-behaved disturbance term. Note that the control variables (listed above) are variables for which the literature suggests are potential determinants of firm performance.

Although not the focus of the analysis they are included to reduce the risk of endogeneity through omitted variable bias. Those control variables found to be jointly statistically insignificant in an initial (general) regression were omitted from a later (specific) run.

Two different (0,1) variables for foreign ownership were used – whether or not the firm had any foreign ownership (*foreign1*) and whether or not the firm was majority foreign owned (*foreign2*). A separate regression was estimated for both measures and for each of the three continuous performance indicators, making a total of six in all.

Since the licensing of foreign technology is a (0,1) variable a probit model was used in place of the LSDV specification. The model was of the following form:

$$P(L=1|z) = \Phi(\tau Z) + v \quad (2)$$

L is the (0,1) licensing variable, Z a matrix comprising the same foreign ownership, control and dummy variables as in the LSDV models, τ the associated coefficients and v a well behaved disturbance term. The focus of the model is to estimate the probability (marginal effects) of the firm licensing foreign technology given that it is foreign owned. As before the model was estimated twice, once for each different measure of foreign ownership.

4.2 Propensity Score Matching

In addition to these analyses propensity score matching was also used. In part this was to provide robustness checks on the conclusions of the LSDV and probit models. Problems of estimating models with the levels of heterogeneity inherent with firm level micro data have been well documented and both the LSDV and probit models are subject to some risk of sample selection bias. Propensity score matching (PSM) is a recognized technique for reducing the risk of such sample selection bias – see, for example, Mallick et al. (2013) and Borin and Mancini (2016). In consequence the technique provides a useful robustness check on the findings of the

regression models. The PSM analysis also extended testing to include the impact of foreign ownership on labour markets in Sub-Saharan Africa. This was done by adding two further outcome (dependent) variables – (a) employment of more educated workers (the mean years of education of the firm’s labour force) and (b) whether or not the firm provided training (0,1).

Propensity score matching dates from Rosenbaum and Rubin (1983). A good exposition of its application to economics is available in Dehejia and Wahba (2002). The central feature of matching analysis is the relationship between a *treatment* variable and an *outcome* variable. In this study the *treatment* variable is foreign ownership (defined in three different ways) and the *outcome* variable indicates whether the firm pays a bribe or not. A simple approach would be to compare a sample of foreign owned firms with a sample of other firms and test whether there is a statistically significant difference in, say, productivity between the two. Unfortunately, such an approach would almost certainly produce biased results unless the *treated* and *control* groups closely resemble each other in all relevant attributes other than the *treatment*. The selection of a control group that satisfies these conditions is known as a *matching* approach. It seeks to replicate the process of experimental random sampling using non-experimental observed data.

The standard matching approach considers three key parameters:

- ATE – the average treatment effect in the population (defined as all treated and untreated firms or individuals).
- ATT – the average treatment effect for treated firms (foreign owned firms in this paper)
- ATNT – the average treatment effect for untreated firms (firms that are not foreign owned).

These are defined as:

$$\text{ATE} = E(Y_{1i} - Y_{0i}) \equiv E(\beta_i) \quad (3)$$

$$ATT = E(Y_{1i} - Y_{0i} | D_i = 1) \equiv E(\beta_i | D_i = 1) \quad (4)$$

$$ATNT = E(Y_{1i} - Y_{0i} | D_i = 0) \equiv E(\beta_i | D_i = 0) \quad (5)$$

where Y is the outcome (performance variable), with subscript 1 for those firms that are *treated* (foreign owned) and subscript 0 for those that are not. D is an indicator of the treatment received (by definition 1 for treated (foreign owned) and 0 for untreated).

As discussed above the simplest estimator of the effects of treatment (foreign ownership) on the outcome (payment of a bribe) is simply to compare the means of the treated (foreign owned) firms with the untreated (domestic). However, such an approach is biased, which results from two possible sources: bias from selection on observables (comparing firms that are not comparable or weighting comparable individuals differently) and bias from selection on unobservable variables. The latter is a version of the problem of possible excluded *confounding* variables or omitted variable bias. It is never certain that an important confounding variable has not been excluded but it is important to demonstrate that steps have been taken to reduce this risk. In this study the most common approach is used, that is to include the full set of control variables (listed earlier) for which observed data are available.

Reducing bias from selection on observables requires a more complex explanation. To estimate ATT , it is necessary to assume that all relevant differences are captured in the observed attributes of the treated and untreated firms. That is, that no bias from selection on unobservables is present and that both treated and untreated firms are observed to have shared attributes. Selection is performed using a propensity score $p(x)$ where:

$$p(x) \equiv P(D=1|X=x) = E(D|X=x) \quad (6)$$

The most common approach uses a probit model to define the propensity score and this is followed here. Unlike the model discussed earlier this probit model is not intended to be itself

a causal model. It acts as a way of identifying and summarising the key characteristics of the *treated* (foreign owned) firms. The next step is to match each *treated* (foreign owned) firm with a comparable *untreated* (domestic) firm. There are many different ways in which this matching can be done. The most common is to select comparison firms according to the *nearest neighbour* principle. For each foreign firm this involves selecting an *untreated* (domestic) firm with the closest value of the propensity score. The matching procedure used here was nearest neighbour sampling with replacement. Other methods of matching, including several using kernel densities, were also used. Kernel density matching with bootstrapped standard errors was used for this study to ensure common support between the treated and control groups.

5. ANALYSIS

5.1 Regression Results

Table 3 presents the results of the least squares regression analysis. The analysis examines the determinants of three firm level performance variables – productivity (log of output per worker), profitability (log of profit per worker) and exporting (share of exports in total sales). The regression analysis is intended to test the hypotheses that foreign ownership is associated with better firm performance according to each of these criteria. The inclusion of other possible determinants of firm performance is as “control” variables. That is, they are included with the intent of reducing the risk of endogeneity through omitted variable bias. Since the hypotheses are that foreign ownership qualitatively affects firm performance – that is, the key influence is whether or not the firm has some foreign ownership or is majority foreign owned and not the precise percentage ownership – two equations were estimated for each performance (dependent) variable. The first of these uses the *foreign1* (0,1) variable (any foreign ownership) and the second the *foreign2* (0,1) variable for majority foreign ownership. The first step was to

estimate a general model and to reduce it to a specific one by omitting those control variables that jointly were not statistically significant. Only the specific (reduced) model with (jointly) statistically insignificant variables excluded is reported in each case. All specifications include both sector and firm size class dummy variables.

With respect to productivity (log of output per worker), both the ‘any foreign ownership’ (*foreign1*) and ‘majority foreign ownership’ (*foreign2*) are shown to have a positive and statistically significant effect (at 99% confidence) in each of their separate regressions. The estimates suggest that firms with any level of foreign ownership have output per worker about 142% higher than those that do not. For majority foreign owned firms, the comparable estimate is about 170%. Of the control variables perceived constraints arising from both infrastructure and from bureaucracy were found to have a statistically significant negative on productivity. The experience of the firm’s top manager and being in receipt of a loan were found to have statistically significant positive effects on productivity. Unexpectedly, perceived constraints with the level of workforce education also had a positive and statistically significant effect. Mineral rents and a relatively high rural population were found to have statistically significant positive effects.

With respect to profitability (profit per worker) the effects of foreign ownership are similar to those for productivity. Both *foreign1* (any foreign ownership) and *foreign2* (majority foreign ownership) were found to have statistically significant (at 99% confidence) effects on profitability. Firms with some foreign ownership were estimated to be about 142% more profitable than other firms and majority owned firms were estimated to be about 160% more profitable than other firms. With respect to the control variables both infrastructure and bureaucracy constraints were found to have statistically significant negative effects on profitability. The experience of the top manager and being in receipt of a loan were, as with productivity, found to have a positive and statistically significant effect. GDP per capita did

have a statistically significant negative effect. However, the estimated magnitude of this effect was very small indeed.

Turning to export propensity (the share of exports in total sales) the effects of foreign ownership (both *foreign 1* and *foreign2* in their separate regressions) were yet again positive and statistically significant (at 99%). The results suggest foreign owned firms to have an export propensity in the order of about 4.6 times that of other firms. This applies both to firms with some foreign ownership to those with none and majority foreign owned firms to all others. With respect to the control variables export propensity was behaviourally distinct from productivity and profitability in several key respects. The age of the firm was found to have a statistically significant effect on export propensity despite being statistically insignificant for both productivity and profitability. GDP per capita was found to have a positive and statistically significant effect on export propensity.

The findings of the positive impact of foreign ownership on our different measures of firm performance are consistent with the industrial organisation theory of FDI (ownership advantages) and some existing empirical studies (see, Zhang et al. 2003; Raff and Wagner, 2014; Zeitun and Gang, 2007; Halkos and Tzeremes, 2007; Gelubcke, 2013; Okafor 2017). As argued earlier, foreign ownership comes with some ownership advantages that allow for some superior tangible and intangible assets over host market firms. In our sample, these superior assets may have facilitated easier access to international markets, use of efficient and cost-effective production techniques, and better managerial and technical expertise. Therefore, our hypotheses that foreign owned firms will perform better is accepted.

With respect to some of the control variables, the costs associated with poor quality of infrastructure and how that can impede on firms' productivity and operational capacity may be explaining the negative effect with performance. This is consistent with most of the existing

findings in literature (e.g., Okafor, 2017; Cole et al. 2018; Islam and Hyland, 2019). Our findings of the negative impact of government bureaucracy is supported by studies like Escribano and Guasch (2005) and Dollar et al. (2005). Excessive government bureaucracy can lead to overregulation, inefficient processes in the acquisition of reliable services and thus, an eroding effect of the performance of firms (Hallward-Driemeier and Pritchett, 2015). The positive impact of manager's experience of firm performance is consistent with those of Harlow (2008) and Zhang et al. (2016). Experience is associated with higher levels of skill that are valuable for productivity, competitiveness and maximisation of economic rents (Bryan, 2006), and this may be explaining the positive relationship of experience with performance in our sample. Its negative relationship with export is surprising. However, international level managerial experience, foreign language skills, and international business knowledge which are more likely to influence the exporting activities of firms, might have been lacking in our sample of firms (Nakos et al. 1998). This is only a plausible explanation because we do not have enough information from the data to empirically test this line of argument.

Firms in receipt of loan/credit makes it easier to carry out productive and profit enhancing investments. This argument is used to provide a justification for the positive relationship between access to a loan and firm performance in our result. This is in line with existing studies on the importance of credit for firm performance (Adegboye and Iweriebor, 2018; Xu et al. 2020). The positive relationship of the perceived constraints with the level of workforce education, is in contrast with studies by Bouazza et al. (2015) and Vandenberg and Trinh (2016). A plausible explanation may be that firms seek ways of mitigating against skill and education deficiencies by providing in-house training for their workers. This is also the case as seen in our propensity score matching analysis where firms had a significant likelihood of offering training to its employees. Its negative impact on exports possibly confirms that the training provided is not enough to compensate for the international business knowledge and

awareness necessary to trade across borders (Nakos et al. 1998). The insignificant relationship of age with productivity and profitability is similar to findings by Guest (2009) and may imply that older firms are no more than likely to continuously benefit from scale economies in comparison to younger firms. Its positive impact on export agrees with empirical studies by Becchetti and Rossi (2000). This shows that the time and duration needed to develop international trade links that is permissible with age, is an important determinants of export activities (Baldauf, 2000).

Results of the GDP per capita confirm their mixed findings in existing studies (Chauvet and Jacolin, 2017; Pastore et al. 2020). The relationship between GDP per capita, domestic demand of goods/services and the export performance of firms is often dependent on the degree of transition reforms in countries. Hence, the mixed results in empirical studies (Singh, 2009). Mineral rents also produced mixed results. This is consistent with studies by Zoogah (2018) and Das and Mahalik (2020). These inconsistencies may be explained by the exploitative and rent-seeking nature of the natural resource sector. Furthermore, SSA region is characterised by the availability of natural resources and low levels human capital. When combined (i.e., high natural resources per worker and low human capital per worker), this can have a negative effect on exports (Zeufack, 2001). The Arthur Lewis model argues the importance of the availability of rural labour for the onset development and performance of firms in developing countries since firms can save on labour costs to facilitate further growth enhancing investments (Lewis, 1954; Wang and Piesse, 2009). This may help explain our findings of the positive relationship between rural labour and firm performance.

Table 4 presents the results of the probit regression analysis for one further firm performance (dependent) variable - whether or not the firm licensed foreign technology. As with the least squares regression the analysis included both sector and firm size class dummy variables. Again, the results reported are those for the relevant specification where control variables that

were jointly insignificant had been excluded. As before separate regressions were run with *foreign1* or *foreign2* as the key explanatory variable. The results of the probit analysis imply that firms with any level of foreign ownership (*foreign1*) and those with majority foreign ownership (*foreign2*) have a statistically significant higher probability of licensing foreign technology. The marginal effect for each was estimated at 0.17 and 0.16 respectively. The results for the control variables suggest that foreign ownership is not the only determinant of licensing foreign technology. For example, training, productivity, exporting and innovation were all found to exhibit a statistically significant positive association with a higher probability of licensing. Perceived bureaucratic constraints were found to have a statistically significant negative effect.

Taken overall our regression analysis shows that the predictions of theory with respect to the transfer of ownership advantages to foreign affiliates are supported by the data from our sample of firms from Sub-Saharan Africa. In particular, the data shows firm performance according to productivity, profitability and exporting to be significantly higher for foreign owned firms than others. This applies to both firms with minority and majority foreign ownership. A further implication of the theory is that the transfer of the ownership advantages to an affiliate does not come as a free gift. The evidence of our sample is that foreign owned firms in Sub-Saharan Africa are substantially more likely to license foreign technology. Despite these clear findings the regression analysis should not be unsupported in the process of drawing conclusions. In particular the issue of heterogeneity and, in consequence, potential sample selection bias has long been established as a potential risk with firm level data. To address this risk the regression analysis was supported by an analysis using propensity score matching.

5.2 Propensity Score Matching

The propensity score matching (PSM) analysis is summarised in Table 5. The analysis is not just a robustness check on the conclusions of the regression analysis but also extends the

analysis to consider the effects of foreign ownership on two aspects of labour skills in the sample of Sub-Saharan African firms. These are (a) employment of more educated workers and (b) training of workers.

The PSM results support the estimates of the LSDV regressions with respect to productivity, profitability and export propensity. PSM analysis for each of these outcome (performance) variables for both treatment variables (*foreign1* and *foreign2*) suggests that the treatment effect (ATT) of foreign ownership is positive and statistically significant (at 99%). In all cases the magnitude of this effect is broadly comparable to the LSDV regression estimates. For example, the estimated treatment effect of *foreign1* on productivity (log of output per worker) is 149%, compared to the regression estimate of 142%. Likewise, the estimate treatment effect of *foreign2* on profitability is 144% compared to the regression estimate of 161%. The PSM results likewise suggest the findings of the probit analysis to be robust. The estimated treatment effect (ATT) of both measures of foreign ownership, as with the probit model, was found to be positive and statistically significant (99%). Again, the magnitude of the treatment effects (an 18% higher probability of licensing foreign technology for *foreign1* and a 15% higher probability for *foreign2*) is close to those predicted by the probit model. We conclude that the finding of a statistically significant positive relationship between both measures of foreign ownership and each of the four performance variables is robust with respect to the choice of estimator.

The matching analysis also tests whether there exists a positive treatment effect of foreign ownership on (a) employment of more educated workers and (b) training of employees by firms. The treatment effect of any foreign ownership on the average number of years of education of the firm's employees was estimated to be 0.54 (significant at 95% confidence). That is, firm with at least some foreign ownership employed workers who, on average, had about 6 months more education than those that had no foreign ownership. Likewise, the

treatment effect on average education years for majority foreign owned firms was 0.82 (statistically significant at 99%), implying that they typically employed workers with just under 10 months more education than other firms. Firm with any foreign ownership (*foreign1*) were found to have a positive and statistically significant (at 95%) effect on the likelihood that the firm offered training to its employees but the estimated magnitude of this effect was very small. There was no statistically significant treatment effect on training for majority foreign owned firms (*foreign2*). **The results show that there is no overwhelming evidence for hypothesis 4. That is, these results suggest that foreign owned firms are not different to domestic firms in SSA to any consequential extent in offering training.** However, they do provide more demand for educated labour than comparable domestic firms.

6. CONCLUSIONS

To our understanding, no empirical study has investigated in a much broader context, the effects of foreign ownership on the economic performance of firms in Sub-Saharan Africa (SSA). We examined economic performance with respect to financial profitability, productivity, export intensity, and skilled labour acquisition. The results showed that foreign owned firms significantly outperformed their domestic counterparts in all the performance measures analysed. The analysis was based on a sample of 5,937 firms across 9 SSA countries using the least square dummy variable (LSDV) and propensity score matching (PSM) techniques. In general, our findings further lend support to the existing literature on the importance of ownership advantages embodied in multinational enterprises and their affiliates. Following our results, we deduced a number of policies with implications for SSA host countries.

First, economic performance of firms with respect to productivity and exports can easily have an effect on the wider economy in the form of foreign exchange earnings, spill-over gains, job creation, etc. **Thus, it is important that government and regional policies in SSA which encourage the performance and survivability of firms pursued and sustained.** Second, it is also necessary that efficient and resourceful channels are set in place by host countries to allow beneficial links between foreign and domestic firms. This is particularly important in order to maximise the gains of spill-over effects. Third, policies targeted at human capital skills development should be pursued. With findings showing that foreign firms are biased toward skilled workers, having a labour force that is skilled will be another way for SSA countries to sustain the accumulation of foreign capital. Finally, with foreign firms showing more desire toward the training of their workers, it is vital that host governments continue to provide an enabling environment for this. This can be achieved through subsidies, tax breaks, and private-public partnership programmes for firms that engage in significant trainings for their workers. Training as shown in the literature helps raise the productivity of workers and also increases the chances of spill-over absorption.

REFERENCES

- Abeberese, A. B., 2017. Electricity Cost and Firm Performance: Evidence from India. *Review of Economics and Statistics*, 99(5), 839-852
- Adegboye, A. C., and Iweriebor, S., 2018. Does Access to Finance Enhance SME Innovation and Productivity in Nigeria? Evidence from the World Bank Enterprise Survey. *African Development Review*, 30(4), 449-461
- Agarwal, S., and Ramaswami, S. N., 1992. Choice of Foreign Market Entry Mode: Impact of Ownership, Location and Internalisation Factors. *Journal of International Business Studies*, 23(1), 1-27
- Alfaro, L., and Chen, M. X., 2012. Surviving the Global Financial Crisis: Foreign Ownership and Establishment Performance. *American Economic Journal: Economic Policy*, 43(3), 30-55
- Alili, M. Z., 2018. Do Foreign-Owned Firms Provide More Formal Training than their Domestic Counterparts? *European Journal of Sustainable Development*, 7(4), 302-316
- Aydin, N., Sayim, M., and Yalama, A., 2007. Foreign Ownership and Firm Performance: Evidence from Turkey. *International Research Journal of Finance and Economics*, 11(1), 103-111
- Baldauf, A., Cravens, D. W., and Wagner, U., 2000. Examining Determinants of Export Performance in Small Open Economies. *Journal of World Business*, 35(1), 61-79
- Bandick, R., and Karpaty, P., 2011. Employment Effects of Foreign Acquisition. *International Review of Economics and Finance*, 20(2), 211-224
- Barzin, S., D'Costa, S., and Graham, D. J., 2018. A Pseudo-Panel Approach to Estimating Dynamic Effects of Road Infrastructure on Firm Performance in a Developing Country Context. *Regional Science and Urban Economics*, 70, 20-34
- Becchetti, L., and Rossi, S. P., 2000. The Positive Effect of Industrial District on the Export Performance of Italian Firms. *Review of Industrial Organization*, 16(1), 53-68
- Benfratello, L., and Sembenelli, A., 2006. Foreign Ownership and Productivity: Is the Direction of Causality so Obvious? *International Journal of Industrial Organisation*, 24(4), 733-751

- Boddin, D., Raff, H., and Trofimenko, N., 2017. Foreign Ownership and the Export and Import Propensities of Developing-Country Firms. *The World Economy*, 40(12), 2543-2563
- Bonin, J. P., Hasan, I., and Wachtel, P., 2005. Bank Performance, Efficiency and Ownership in Transition Countries. *Journal of Banking and Finance*, 29(1), 31-53
- Borin, A., and Mancini, M., 2016. Foreign direct investment and firm performance: an empirical analysis of Italian firms. *Review of World Economics*, 152(4), 705-732
- Bouazza, A. B., Ardjouman, D., and Abada, O., 2015. Establishing the Factors affecting the Growth of Small and Medium-Sized Enterprises in Algeria. *American International Journal of Social Science*, 4(2), 101-115
- Bryan, J., 2006. Training and Performance in Small Firms. *International Small Business Journal*, 24(6), 635-660
- Bykova, A., and Lopez-Iturriaga, F., 2018. Exports-Performance Relationship in Russian Manufacturing Companies: Does Foreign Ownership Play an Enhancing Role? *Baltic Journal of Management*, 13(1), 20-40
- Carney, M., Estrin, S., Liang, Z., and Shapiro, D., 2019. National Institutional Systems, Foreign Ownership and Firm Performance: The Case of Understudied Countries. *Journal of World Business*, 54(4), 244-257
- Chauvet, L., And Jacolin, L., 2017. Financial Inclusion, Bank Concentration, and Firm Performance. *World Development*, 97, 1-13
- Chowdhury, A., and Mavrotas, G., 2006. FDI and Growth: What Causes What? *World Economy*, 29(1), 9-19
- Chuang, Y., and Hsu, P., 2004. FDI, Trade, and Spillover Efficiency: Evidence from China's Manufacturing Sector. *Applied Economics*, 36(10), 1103-1115
- Claessens, S., and Djankov, S., 1999. Ownership Concentration and Corporate Performance in the Czech Republic. *Journal of Comparative Economics*, 27, 498-513
- Cole, M. A., Elliott, R. J., Occhiali, G., and Strobl, E., 2018. Power Outages and Firm Performance in Sub-Saharan Africa. *Journal of Development Economics*, 134, 150-159

- Cuervo-Cazurra, A., and Genc, M., 2008. Transforming Disadvantages into Advantages: Developing-country MNEs in the Least Developed Countries. *Journal of International Business Studies*, 39(6), 957-979
- Das, K. C., and Mahalik, M. K., 2020. International Subsidiary Performance of Indian Multinationals in the Extractive Sector: The Role of Institutional Quality, Corruption and Investment Regime. *Resources Policy*, 67, p.101664
- Dehejia, R. H., and Wahba, S., 2002. Propensity Score-Matching Methods for Nonexperimental Causal Studies. *Review of Economics and statistics*, 84(1), 151-161
- Dimelis, S., and Louri, H., 2002. Foreign Ownership and Production Efficiency: A Quantile Regression Analysis. *Oxford Economic Papers*, 54(3), 449-469
- Dollar, D., Hallward-Driemeier, M. and Mengistae, T., 2005. Investment Climate and Firm Performance in Developing Economies. *Economic Development and Cultural Change*, 54(1), 1-31
- Douma, S., George, R., and Kabir, R., 2006. Foreign and Domestic Ownership, Business Groups, and Firm Performance: Evidence from a Large Emerging Market. *Strategic Management Journal*, 27(7), 637-65
- Douma, S., George, R., and Kabir, R., 2006. Foreign and Domestic Ownership, Business Groups, and Firm Performance: Evidence from a Large Emerging Market. *Strategic Management Journal*, 27(7), 637-657
- Dunning, J. H., 1977. Trade, Location of Economic Activity and the MNE: A Search for an Eclectic Approach. *In The International Allocation of Economic Activity* (pp. 395–418). Palgrave Macmillan, London
- Dunning, J. H., 1988. The Eclectic Paradigm of International Production: A Restatement and Some Possible Extensions. *Journal of International Business Studies*, 19(1), 1-31
- Escribano, A., and Guasch, J. L., 2005. Assessing the Impact of The Investment Climate on Productivity using Firm-Level Data: Methodology and the Case of Guatemala, Honduras and Nicaragua. World Bank Policy Research Working Paper, No. 3621. © The World Bank, Washington, D.C

- Filatotchev, I., Stephan, J., and Jindra, B., 2008. Ownership Structure, Strategic Controls and Export intensity of Foreign-Invested Firms in Transition Economies. *Journal of International Business Studies*, 39(7), 1133-1148
- Fowowe, B., 2017. Access to Finance and Firm Performance: Evidence from African Countries. *Review of Development Finance*, 7(1), 6-17
- Gaviria, A., 2002. Assessing the Effects of Corruption and Crime on Firm Performance: Evidence from Latin America. *Emerging Markets Review*, 3(3), 245-268
- Gelubcke, J. P. W., 2013. The Performance of Foreign Affiliates in German Manufacturing: Evidence from a New Database. *Review of World Economics*, 149(1), 151-182
- Gelübcke, W., and Philipp, J., 2013. Foreign Ownership and Firm Performance in German Services. *The Service Industries Journal*, 33(15-16), 1564-1598
- Gorg, H., Strobl, E., and Walsh, F., 2007. Why Do Foreign-Owned Firms Pay More? The Role of On-the-Job Training. *Review of World Economics*, 143(3), 464-482
- Guest, P. M., 2009. The Impact of Board Size on Firm Performance: Evidence from the UK. *The European Journal of Finance*, 15(4), 385-404
- Gurbuz, A. O., and Aybars, A., 2010. The Impact of Foreign Ownership on Firm Performance, Evidence from an Emerging Market: Turkey. *American Journal of Economics and Business Administration*, 2(4), 350-359
- Halkos, G. E., and Tzeremes, N. G., 2007. Productivity Efficiency and Firm Size: An Empirical Analysis of Foreign Owned Companies. *International Business Review*, 16(6), 713-731
- Halkos, G. E., and Tzeremes, N. G., 2007. Productivity Efficiency and Firm Size: An Empirical Analysis of Foreign Owned Companies. *International Business Review*, 16(6), 713-731
- Hallward-Driemeier, M., and Pritchett, L., 2015. How Business is Done in the Developing World: Deals Versus Rules. *Journal of Economic Perspectives*, 29(3), 121-40
- Hallward-Driemeier, M., Wallsten, S., and Xu, L.C., 2006. Ownership, Investment Climate and Firm Performance: Evidence from Chinese Firms. *Economics of Transition*, 14(4), 629-647

Hamdan, A., 2018. Board Interlocking and Firm Performance: The Role of Foreign Ownership in Saudi Arabia. *International Journal of Managerial Finance*, <https://doi.org/10.1108/IJMF-09-2017-0192>

Hamori, M., and Koyuncu, B., 2015. Experience Matters? The Impact of Prior CEO Experience on Firm Performance. *Human Resource Management*, 54(1), 23-44

Harlow, H., 2008. The Effect of Tacit Knowledge on Firm Performance. *Journal of Knowledge Management*, 12(1), 148-163

Hawawini, G., Subramanian, V., and Verdin, P., 2003. Is Performance Driven by Industry – or Firm – Specific Factors? A New Look at the Evidence. *Strategic Management Journal*, 24, 1-16

Hijzen, A., Martins, P. S., Schank, T., and Upward, R., 2013. Foreign-Owned Firms Around the World: A Comparative Analysis of Wages and Employment at the Micro-Level. *European Economic Review*, 60, 170-188

Huttunen, K., 2007. The Effect of Foreign Acquisition on Employment and Wages: Evidence from Finnish Establishments. *The Review of Economics and Statistics*, 89(3), 497-5096

Hymer, S. H., 1960. *The International Operations of National Firms: A Study of Direct Foreign Investment*. MIT Press: Cambridge, MA. Massachusetts Institute of Technology, Massachusetts

Hymer, S. H., 1976. *The International Operations of National Firms: A study of Direct Foreign Investment*. Cambridge MA: MIT Press, 14, 139-155

Imi, A., Humphrey, R. M., and Melibaeva, S., 2015. Firm Productivity and Infrastructure Costs in East Africa. *World Bank Policy Research Working Paper*, No. 7278. © The World Bank, Washington, D.C

Islam, A., and Hyland, M., 2019. The Drivers and Impacts of Water Infrastructure Reliability—A Global Analysis of Manufacturing Firms. *Ecological Economics*, 163, 143-157

Kindleberger, C. P., 1969 *American Business Abroad: Six Lectures on Direct Investment*. Yale University Press, New Haven/London (1969)

- Kipsha, E. F., 2013. Impact of Size and Age on Firm Performance: Evidence from Microfinance Institution in Tanzania. *Research Journal of Finance and Accounting*, 4(5), 105-116
- Koch, M., and Smolka, M., 2019. Foreign Ownership and Skill-Biased Technological Change. *Journal of International Economics*, 118, 84-104
- Koellinger, P., 2008. The Relationship between Technology, Innovation, and Firm Performance—Empirical Evidence from E-Business in Europe. *Research Policy*, 37(8), 1317-1328
- Lewis, W. A., 1954. Economic Development with Unlimited Supplies Of Labour. *The Manchester School* 28(2), 139-191
- Lindemanis, M., Loze, A., and Pajuste, A., 2019. The Effect of Domestic to Foreign Ownership Change on Firm Performance in Europe. *International Review of Financial Analysis*, p.101341
- Lipsey, R. E., and Sjöholm, F., 2004. FDI and Wage Spillovers in Indonesian Manufacturing. *Review of World Economics*, 140(2), 321-332
- Lundan, S. M., 2010. What are the Ownership Advantages? *Multinational Business Review*, 18(2), 51-70
- Makhija, M., 2003. Comparing the Resource-Based and Market-Based Views of the Firm: Empirical Evidence from Czech Privatisation. *Strategic Management Journal*, 24(5), 433-451
- Mallick S., and Yang Y., 2013. Productivity Performance of Export Market Entry and Exit: Evidence from Indian Firms. *Review of International Economics*, 21(4), 809-824
- Mattoo, A., Olarreaga, M., and Saggi, K., 2004. Mode of Foreign Entry, Technology Transfer, and FDI Policy. *Journal of Development Economics*, 75(1), 95-111
- Muritala, T. A., 2012. An Empirical Analysis of Capital Structure on Firms' Performance in Nigeria. *International Journal of Advances in Management and Economics*, 1(5), 116-124
- Nachum, L., and Rolle, J. D., 1999. Home Country and Firm-Specific Ownership Advantages: A Study of US, UK, and French Advertising Agencies. *International Business Review*, 8(5–6), 633-660

- Nair-Reichert, U., and Weinhold, D., 2001. Causality Tests for Cross-country Panels: A New Look at FDI and Economic Growth in Developing Countries. *Oxford Bulletin of Economics and Statistics*, 63(2), 153-171
- Nakos, G., Brouthers, K. D., and Brouthers, L. E., 1998. The Impact of Firm and Managerial Characteristics on Small and Medium-Sized Greek Firms' Export Performance. *Journal of Global Marketing*, 11(4), 23-47
- Nkiwane, P., and Chipeta, C., 2019. The Performance of Cross-border Acquisitions Targeting African Firms. *Emerging Markets Review*, 39, 68-82
- Okafor, G., 2017. The Determinants of Firm Performance and Bribery: Evidence from Manufacturing Firms in Nigeria. *International Economic Journal*, 31(4), 647-669
- Pastore, F., Webster, A., and Hope, K., 2020. Assessing the Role of Women in Tourism Related Sectors in The Caribbean. *International Journal of Tourism Research*, 23(3), 378-400
- Phung, D. N., and Mishra, A. V., 2016., Ownership Structure and Firm Performance: Evidence from Vietnamese Listed Firms. *Australian Economic Papers*, 55(1), 63-98
- Raff, H., and Wagner, J., 2014. Foreign Ownership and the Extensive Margins of Exports: Evidence for Manufacturing Enterprises in Germany. *The World Economy*, 37(5), 579-591
- Rosenbaum, P. R., and Rubin, D. B., 1983. The Central Role of the Propensity Score in Observational Studies for Causal Effects. *Biometrika*, 70(1), 41-55
- Shahbaz, M., Nasreen, S., Abbas, F. and Anis, O., 2015. Does Foreign Direct Investment Impede Environmental Quality in High-, Middle-, and Low-Income Countries? *Energy Economics*, 51, 275-287
- Singh, D. A., 2009. Export Performance of Emerging Market Firms. *International Business Review*, 18(4), 321-330
- Soehadi, A. W., 2001. The Relationship Between Market Orientation, Supplier Partnership, Environmental Factors, and Firm Performance in Indonesian Retail Firms. PhD University of Strathclyde
- Tang, Y., and Zhang, K. H., 2016. Absorptive Capacity and Benefits from FDI: Evidence from Chinese Manufactured Exports. *International Review of Economics & Finance*, 42, 423-429

- Thompson, E. R., 2002. Clustering of Foreign Direct Investment and Enhanced Technology Transfer: Evidence from Hong Kong Garment Firms in China. *World Development*, 30(5), 873-889
- Thornhill, S., 2006. Knowledge, Innovation and Firm Performance in High-and Low-Technology Regimes. *Journal of Business Venturing*, 21(5), 687-703
- UNCTADstat, 2018. Foreign Direct Investment Flows and Stocks. © United Nations Conference on Trade and Development, Geneva, Switzerland
- Vandenberg, P., and Trinh, L. Q., 2016. Small Firms, Human Capital, and Productivity in Asia. ADBI Working Paper Series No. 582. © Asian Development Institute, Tokyo, Japan
- Wang, D. T., Gu, F. F., David, K. T., And Yim, C. K. B., 2013. When Does FDI Matter? The Roles of Local Institutions and Ethnic Origins Of FDI. *International Business Review*, 22(2), 450-465
- Wang, J., and Wang, X., 2015. Benefits of Foreign Ownership: Evidence from Foreign Direct Investment in China. *Journal of International Economics*, 97(2), 325-338
- Wang, X., and Piesse, J., 2009. Economic Development and Surplus Labour: A Critical Review of the Lewis Model. Manchester: Brooks World Poverty Institute Working Paper, No. 89. © University of Manchester, UK
- WBES, 2011. World Bank's Enterprise Survey: Understanding the Questionnaire. © The World Bank, Washington, D.C
- Xu, L., Zhang, Q., Wang, K. and Shi, X., 2020. Subsidies, Loans, And Companies' Performance: Evidence from China's Photovoltaic Industry. *Applied Energy*, 260, p.114280
- Zeitun, R., and Gang, T. G., 2007. Does Ownership Affect a Firm's Performance and Default Risk in Jordan? *Corporate Governance: The International Journal of Business in Society*, 7(1), 66-82
- Zeufack, A., 2001. Export Performance in Africa and Asia's Manufacturing: Evidence from Firm-level Data. *Journal of African Economies*, 10(3), 258-281
- Zhang, A., Zhang, Y., and Zhao, R., 2003. A Study of the R&D Efficiency and Productivity of Chinese Firms. *Journal of Comparative Economics*, 31(3), 444-464

Zhang, P., Wierschem, D., Mendez Mediavilla, F. A., and Hong, K. P., 2016. An Empirical Investigation on CEO Turnover in IT Firms and Firm Performance. *Journal of International Technology and Information Management*, 25(2), 67-82

Zoogah, D. B., 2018. Natural Resource Endowment and Firm Performance: The Moderating Role of Institutional Endowment. *Global Strategy Journal*, 8(4), 578-611

TABLES

Table ***

Authors	Variable of interest	Findings
<i>Firm level variables</i>		
(i) Chuang and Hsu (2004); (ii) Halkos and Tzeremes (2007); (iii) Gurbuz and Aybars (2010)	Foreign ownership	Firms with some degree of foreign ownership outperformed wholly owned domestic and state-owned competitors.
(i) Majumdar (1997); (ii) Muritala (2012); (iii) Kipsha (2013)	Age of firm	Firm age is positively related to either financial performance or productivity.
(i) Harlow (2008; Hamori and Koyuncu (2015); Zhang et al. (2016)	Management's experience	Mixed findings in the relationship between firm performance and experience at managerial level.
(i)Iimi et al. (2015); (ii) Barzin et al. (2018); (iii) Tuong et al. (2019)	Quality of infrastructure	Quality infrastructure is positively related to the performance of firms.
(i) Soehadi (2001); (ii) Dollar et al. (2005); Escribano and Guasch (2005)	Government bureaucracy	Excessive government bureaucracy negatively affected the performance of firms.
(i) Fowowe (2017); (ii) Adegboye and Iweriebor (2018); (iii) Xu et al. (2020)	Access to loan/finance	A negative relationship between credit constraints and firm performance.
(i) Thornhill (2006); (ii) Koellinger (2008); (iii) Coad et al. (2016)	Innovation	More innovate firms were found to perform better in terms of growth and sales.
(i) Bouazza et al. (2015); Vandenberg and Trinh (2016); (iii) Rehman et al. (2019);	Uneducated workforce	Uneducated and educated workforce had a constraining and enhancing effect, respectively on firm performance.
<i>Country level variables</i>		
(i) Hallward-Driemeier et al. (2006); (ii) Abeberese (2017); (iii) Chauvet and Jacolin (2017); (iv) Pastore et al. (2020)	GDP per capita	There are mixed findings in relationship between GDP per capita and firm performance.
(i) Zoogah (2018); (ii) Das and Mahalik (2020)	Natural resources	The relationship between natural resource abundance and firm performance produced some mixed results.
(i) Abeberese (2017); Chauvet and Jacolin (2017); (iii) Pastore et al. (2020)	Population	Mixed relationship between population and firm performance.

Country	Mean			Number of Firms
	Foreign Ownership (%)	Employment	Exports as a % of total sales	
DR Congo	14.1%	35.2	3.4%	481
Ghana	12.1%	35.1	7.3%	555
Kenya	7.1%	94.8	22.9%	606
Nigeria	4.1%	44.1	16.2%	2064
Rwanda	18.5%	71.2	3.4%	191
Tanzania	2.5%	38.5	10.6%	397
Uganda	9.7%	55.2	14.3%	409
Zambia	24.1%	35.8	7.3%	634
Zimbabwe	10.5%	140.4	4.2%	600
Full Sample	9.6%	57.8	11.8%	5937

Table 2: Sample by sector				
Sector	Mean			Number of Firms
	Foreign Ownership (%)	Employment	Exports as a % of total sales	
Food	11.1%	109.6	16.9%	712
Tobacco	9.0%	133.5	20.0%	2
Textiles	8.9%	136.5	14.2%	161
Garments	4.2%	30.3	9.0%	296
Leather	9.4%	92.9	25.1%	47
Wood	7.9%	29.4	14.3%	117
Pape	8.0%	62.9	13.4%	27
Publishing, printing etc	7.7%	29.9	9.0%	265
Refined petroleum products	17.6%	110.5	17.4%	20
Chemicals	19.8%	119.8	13.1%	139
Plastics & rubber	28.2%	105.3	18.8%	87
Non-metallic mineral products	11.5%	49.0	16.5%	238
Basic metals	27.8%	67.1	18.8%	55
Fabricated metal products	6.5%	35.1	10.3%	319
Machinery and equipment	11.7%	56.6	12.2%	67
Electronics	9.6%	59.4	14.7%	41
Precision instruments	10.0%	65.5	10.0%	4
Transport equipment	5.3%	39.5	17.2%	19
Furniture	4.5%	24.8	12.1%	411
Recycling	70.0%	54.6	18.3%	6
Construction	15.3%	82.2	7.2%	147
Motor vehicle repair	8.5%	25.1	8.7%	345
Wholesale	12.1%	26.2	12.8%	324
Retail	8.3%	25.9	9.0%	1126
Hotels & restaurants#	7.5%	102.4	8.6%	612
Transport services	10.9%	103.4	12.8%	155
Information Technology	7.7%	15.7	10.7%	84
Full sample	9.6%	57.8	11.8%	5937

TABLE 3: LEAST SQUARES REGRESSION RESULTS							
Independent Variable Description	Label	Dependent variable:					
		Productivity (log of output per worker)		Profitability (log of profit per worker)		Exports (as a % of total sales)	
Any foreign ownership (0,1)	foreign1	1.4261 (0.1156)***		1.4270 (0.1314)***		4.6491 (1.0602)***	
Majority foreign ownership (0,1)	foreign2		1.7049 (0.1288)***		1.6117 (0.1459)***		4.6157 (1.1844)***
Age of firm	agefirm	-0.000 (0.0029)	0.0006 (0.0029)	0.0011 (0.0033)	0.0020 (0.0033)	0.0795 (0.0274)**	0.0840 (0.0274)***
Top manager's experience	mgrexp	0.0100 (0.0046)**	0.0092 (0.0046)**	0.0129 (0.0052)**	0.0122 (0.0052)**	-0.079 (0.0429)**	-0.083 (0.0429)**
Infrastructure constraints	infra	-0.253 (0.0521)***	-0.262 (0.0520)***	-0.251 (0.0603)***	-0.261 (0.0602)***		
Bureaucracy constraints	bureau	-0.313 (0.0577)***	-0.302 (0.0576)***	-0.305 (0.0673)***	-0.288 (0.0673)***	-0.849 (0.5006)*	-0.831 (0.5010)*
Loan received (0,1)	loan3	0.4638 (0.1054)***	0.5027 (0.1052)***	0.5499 (0.1225)***	0.5770 (0.1225)***	3.7578 (0.8379)***	3.8150 (0.8379)***
Workforce education constraints	poored	0.1826 (0.0369)***	0.1749 (0.0368)***	0.1653 (0.0432)***	0.1579 (0.0432)***	-0.590 (0.3306)*	-0.606 (0.3308)*
GDP per capita	gdpcap			-0.002 (0.0002)***	-0.002 (0.0002)***	0.0165 (0.0020)***	0.0166 (0.0020)***
Mineral rents (% of GDP)	minrents	0.3955 (0.0093)***	0.3927 (0.0093)***	0.5578 (0.0215)***	0.5512 (0.0216)***	-1.259 (0.1718)***	-1.265 (0.1724)***
Rural population (% of total)	rural	0.1395 (0.0061)***	0.1384 (0.0061)***	0.1839 (0.0076)***	0.1824 (0.0076)***	0.1815 (0.0588)***	0.1784 (0.0589)***
Constant	_cons	-9.932 (0.6378)***	-9.717 (0.6361)***	-13.14 (0.7298)***	-12.92 (0.7297)***	-10.71 (5.6878)*	-10.03 (5.6848)*
Sector dummy variables		yes	yes	yes	yes	yes	yes
Firm size class dummy variables		yes	yes	yes	yes	yes	yes
Number of observations		3,588	3,588	3,009	3,009	3,599	3,599
F		114.84	116.06	100.01	100.24	12.46	12.35
Prob > F		0.000	0.000	0.000	0.000	0.000	0.000
R-squared		0.5878	0.5904	0.603	0.6035	0.1336	0.1327
Adj R-squared		0.5827	0.5853	0.597	0.5975	0.1229	0.1219
Root MSE		2.4883	2.4805	2.6191	2.6173	22.776	22.788

TABLE 4: PROBIT REGRESSION RESULTS (Marginal Effects Reported)			
Independent Variable		Dependent variable:	
Description	Label	Licensing	
Any foreign ownership (0,1)	foreign1	0.1719 (0.0310)***	
Majority foreign ownership (0,1)	foreign2		0.1626 (0.0335)***
Training provided by firm (0,1)	training	0.0501 (0.0200)***	0.0532 (0.0202)***
Productivity (log of output per worker)	lopw	0.0079 (0.0033)**	0.0088 (0.0033)***
Exports as a % of total sales	export	0.0006 (0.0002)**	0.0006 (0.0002)**
Infrastructure constraints	infra	0.0252 (0.0110)**	0.0239 (0.0111)**
Bureaucracy constraints	bureau	-0.063 (0.0142)***	-0.062 (0.0142)***
New production processes (0,1)	newprocess	0.0831 (0.0186)***	0.0822 (0.0186)***
New management processes (0,1)	newmgt	0.0555 (0.0201)***	0.0566 (0.0201)***
Workforce education constraints	poored	0.0146 (0.0080)*	0.0152 (0.0080)*
Mineral rents (% of GDP)	minrents	0.0066 (0.0025)***	0.0060 (0.0025)**
Rural population (% of total)	rural	0.0070 (0.0013)***	0.0068 (0.0013)***
Sector dummy variables		yes	yes
Firm size class dummy variables		yes	yes
Number of observations		1580	1580
LR chi2(39)		311.41	301.37
Prob > chi2		0	0
Pseudo R2		0.2114	0.2046
Log likelihood		-580.84495	-585.86455

TABLE 5: PROPENSITY SCORE MATCHING RESULTS									
Outcome	Sample	Treated	Controls	Difference	Standard	T Statistic	Observations		
Variable					Error		Untreated	Treated	Total
Using <i>foreign1</i> as the treatment variable									
lopw	Unmatched	12.214	9.839	2.375	0.164	14.49	2,509	490	2,999
	ATT	12.214	10.723	1.491	0.184	8.09			
lppw	Unmatched	12.100	9.764	2.336	0.184	12.67	2,058	421	2,479
	ATT	12.100	10.681	1.419	0.201	7.05			
export	Unmatched	13.865	8.644	5.221	1.068	4.89	2,963	616	3,579
	ATT	13.865	9.263	4.603	1.206	3.82			
training	Unmatched	0.444	0.323	0.120	0.023	5.20	2,527	498	3,025
	ATT	0.444	0.387	0.057	0.026	2.20			
edyears	Unmatched	11.679	10.887	0.792	0.240	3.30	1,159	243	1,402
	ATT	11.679	11.142	0.537	0.269	2.00			
licensing	Unmatched	0.384	0.132	0.252	0.024	10.29	1,306	276	1,582
	ATT	0.384	0.208	0.176	0.033	5.36			
Using <i>foreign2</i> as the treatment variable									
lopw	Unmatched	12.459	9.877	2.583	0.177	14.61	2,592	407	2,999
	ATT	12.459	10.893	1.566	0.198	7.90			
lppw	Unmatched	12.274	9.804	2.470	0.197	12.53	2,121	358	2,479
	ATT	12.274	10.834	1.440	0.215	6.70			
export	Unmatched	13.857	8.903	4.954	1.204	4.11	3,117	462	3,579
	ATT	13.857	9.331	4.526	1.362	3.32			
training	Unmatched	0.428	0.330	0.098	0.025	3.90	2,613	411	3,024
	ATT	0.428	0.426	0.002	0.027	0.09			
edyears	Unmatched	11.929	10.879	1.049	0.262	4.01	1,208	195	1,403
	ATT	11.923	11.106	0.817	0.286	2.86			
licensing	Unmatched	0.391	0.142	0.249	0.027	9.21	1358	220	1578
	ATT	0.391	0.238	0.153	0.035	4.39			