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Management Practices, with an Update
on Sub-Saharan Africa**

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ABSTRACT

Firm Ownership Control and Management Practices, with an Update on Sub-Saharan Africa*

This paper examines if ownership control—the share of largest owner in the firm—explains the difference in the adoption of management best practices between Sub-Saharan Africa (SSA) and rest-of-the-world (ROW). Using a sample of 156,833 firms from 130 countries, of which 25,005 are in SSA, we estimate the average management practices score in SSA and ROW as -0.096 and 0.023, respectively. The average treatment effect on management practices scores of going from less than 50 percent ownership control to full ownership control is negative, and it is comparable between SSA (-0.136) and ROW (-0.147). However, the share of sole proprietorships characterized by full ownership control is 52 percent in SSA compared to only 30 percent in ROW. A lower average of management practices score in SSA compared to ROW is largely driven by preponderance of sole proprietorship, in addition to lack of awareness about management best practices in SSA.

JEL Classification: D24, E25, G31, L11, O30, O47

Keywords: business practices, productivity, management, Sub-Saharan Africa

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Introduction

Productivity gaps across firms are large and persistent.¹ It is well documented that structured management practices are a strong predictor of the differences in firm productivity.² If better managed firms are more productive then what prevents so many firms from adopting management best practices? Despite a growing consensus that structured management practices can boost firm productivity growth in Sub-Saharan Africa (SSA)³, little is known about the barriers to adoption of management best practices in the region.

One of the proximate causes of the difference in management practices is the ownership structure of the firm (Morck, Shleifer, and Vishny 1988; Cai et al. 2013; Lemos and Scur 2018).⁴ For instance, management best practices are less evident in single-ownerships or joint-ownerships controlled by a few owners, e.g., family-owned firms (Bloom et al 2007; Bertrand et al. 2008; Cai et al. 2013; McKenzie and Woodruff 2017), dynastic family firms (Lemos and Scur 2018) and firms in which the CEO is the founder of the firm (Bennett et al 2017). Differences in management practices may arise if sole proprietorships and publicly owned companies pursue different objectives. For instance, the former may prioritize family control, while the latter may focus on efficiency and share-holder value maximization. Such differences in objectives will lead to different strategies in recruitment of managers, and types of management practices.

If fewer owners with more control over the firm leads to less structured management practices, then sole proprietorships in which the owner exerts full control over the firm are less likely to be efficiently managed than shareholding and partnerships companies. However, in joint ventures, control over firm ownership does not reflect a binary choice. We exploit the variation in firm ownership control (ownership control, hereon) measured as the share of largest owner in the firm⁵ to examine the causal effect of the ownership control on the adoption of management best practices. We study a large sample of 156,833 firms including sole proprietorships and different types of joint ventures spread across 130 countries including 25,005 firms from 41 countries in SSA. The data comes from several rounds of the World Bank Enterprise Surveys (WBES) administered between 2006 and 2022.

¹ Hsieh and Klenow (2009), Syverson (2011), Hsieh and Olken (2014), IGC (2019), Eslava et al. (2019).

² Bloom and Van Reenen (2007), Bloom et al (2013), Bloom et al. (2016), Bruhn, Karlan, and Schoar (2018), Bloom et al (2017), Scur et al (2021), among others.

³ Dennis et al. (2016); McKenzie and Woodruff (2017); Jones et al. (2019); Calderón (2021).

⁴ Other proximate causes of the difference in management practices are competitive pressure (Hermalin 1994; Bennett 2013), psychological traits of the manager (Galasso and Simcoe 2011; Malmendier and Tate 2005), personal “style” of the CEO (Bertrand and Schoar 2003), and founder CEOs (Bennett et al 2017).

⁵ We use the question “*What percentage of this firm is owned by the largest owner?*” and convert the percentage values into a zero-to-one scale.

Finally, we compare the findings between SSA, and other countries classified as the rest-of-the-world (ROW).

Ownership control can affect management practices through various channels including differences in the skill level of managers (Perez-Gonzales 2006; Bennedsen et al. 2007; Bloom et al. 2013), lack of awareness of managerial underperformance (Rivkin 2000; Bloom and Van Reenen 2007; Gibbons & Roberts 2013; Bennett et al. 2015), and implicit employment commitments⁶ that in turn reduces the returns to investment in good management practices (Ellul et al. 2014; Bach & Serrano-Velarde 2015; Lemos and Scur 2018). Strict ownership control can produce informational constraints by creating less opportunities for entrepreneurship training and mentoring programs for managers. However, experimental evidence on the effect of managerial training programs on management best practices remains largely inconclusive.⁷ Non-experimental evidence show that firm performance is strongly correlated with matching frictions between firm-type and manager-type and more frictions in firms with poor management practices lead to underperformance, especially in low-income countries (Bandiera et al. 2017). We examine a range of institutional and informational factors as potential drivers of the relationship between ownership control and management practices.

Our main variable of interest, ownership control, takes the value of one for sole proprietorships. As ownership control can't account for any variation in management practices among sole proprietorships, we examine the role of domestic ownership of the firm in management practices. Existing studies show that management quality is low specifically among the domestic firms but not the foreign multinational firms in poor countries (Bloom et al. 2014) and management best practices tend to be adopted in firms that export products of better quality and higher volumes and have more export destinations (Bloom et al. 2020).⁸ We construct a variable on domestic ownership based on the ownership share of the domestic

⁶ The literature documents that family firms provide better job security as a compensating differential for lower wages (Bassanini et al. 2010, Bach & Serrano-Velarde 2015), perform better in difficult labor relations settings (Mueler & Philippon 2011) and provide more within-firm wage insurance to the employees (Ellul et al. 2014).

⁷ There exist both failures and successes of training programs for managers contributing to the adoption of management best practices across different ownership structures. See Bloom et al. (2013), McKenzie and Woodruff (2013), Fafchamps and Woodruff (2017), McKenzie and Woodruff (2017), Bruhn et al. (2018), Campos et al. (2017), Anderson et al. (2018) and Abebe et al. (2019).

⁸ Bloom et al. (2015) estimates a positive causal impact of trade-induced competition on management practices among Chinese firms. Other studies (Atkin et al. 2017; Verhoogen 2008) find similar positive causal evidence of access to foreign markets on more structured firm management. In addition, multinational enterprises tend to follow management best practices as they face competition across the world (Bloom et al. 2012b; Heyman et al. 2019). Access to foreign markets is generally correlated with higher firm productivity (De Loecker & Goldberg 2014; Jensen & Miller 2018).

private owners, which equals to one in the case of full domestic ownership and zero when a firm is fully owned by foreign owners. We examine whether management practices are less structured in sole proprietorships under domestic ownership especially in SSA.

To ensure comparability of the measure of management practices across different firm sizes, we combine the methodology of Bloom and Van Reenen (2007) and McKenzie and Woodruff (2017) and compute a composite score of management practices as an unweighted average of standardized values from 10 indicators (measured on a zero-to-one scale, except for one variable)⁹. The management best practices score obtained based on the 10 indicators¹⁰ in the current study closely corresponds to that of Bloom et al (2016) over a sample of 19 countries that are common in both datasets.

We estimate a large and statistically significant gap in the average score on management practices between SSA (-0.096) and ROW (0.023). The distribution of firms across ownership structures varies between regions. More than 52 percent of the firms are sole proprietorships in SSA compared to only 30 percent in ROW. The share of sole proprietorships also greatly varies within SSA, from as low as 8.9 percent in South Africa to nearly 90 percent in Sierra Leone. However, the average ownership control and domestic ownership between SSA and ROW show negligible difference. Sole proprietorships, on average, are less efficiently managed than other ownership types in both regions.

The conditional correlation outcomes show a negative and statistically significant relationship between ownership control and management practices for both SSA and ROW. An increase in ownership control from the 10th to 90th percentile accounts for 10 and 4.5 percent of the 90-10 spread in management practices in SSA, and ROW, respectively. Domestic ownership is also negatively correlated with management practices in both SSA and ROW. These results are robust at the sector level, and at the individual country level in SSA. Ownership control and domestic ownership share still matter for differences in the

⁹ Management of small firms is perceived as less focused on human relations compared to large firms (McKenzie and Woodruff 2017), as such the quality and type of management practices are likely to vary across firms. Bloom and Van Reenen (2007) and Bloom et al. (2016) measured management practices for large firms using a composite score based on 18 management practices (including HR practices, performance tackling, and target-setting and forward-looking). McKenzie and Woodruff (2017), to examine the efficacy of management skills in small and micro firms (less than 10 employees), constructed a business practices score from 26 questions that cover broad areas of marketing, record-keeping, financial planning, among others.

¹⁰ These 10 indicators measure if a firm (1) has internationally-recognized quality certification; (2) communication with clients and suppliers by email; (3) has its own website; (4) paid for security in last fiscal year (FY); (5) spent percent of senior management time in dealing with govt regulations; (6) has a checking and saving account; (7) has an overdraft facility; (8) inspected by tax officials in last FY; (9) has financial statements checked & certified by external auditor; (10) has formal training programs for full-time employees in last FY.

adoption of structured management practices after controlling for potential confounders including firm age, firm size and firm density as highlighted in the existing literature.

Causal identification of firm performance is challenging as firms can be different based on a set of unobservable characteristics. We use a potential-outcome framework to obtain the counterfactual management practices score using the propensity scores (PSM), the nearest neighbour (NNM) method, the inverse-probability-weighted (IPW) estimator and the inverse-probability-weighted regression-adjustment (IPWRA) estimator, which produces doubly robust estimates (Wooldridge 2010). Evidence on the average treatment effects (ATEs) from both binary and multivalued ownership control variables suggest strong negative causal effect of ownership control and domestic ownership on management practices in both SSA and ROW. The estimated potential-outcome mean management practices score of the control group, i.e., firms with below 50 percent ownership control is 0.040 and -0.020 in SSA and ROW, respectively. The ATE on management practices score of going from less than 50 percent ownership control to full ownership control is -0.136 and -0.147 for SSA and ROW, respectively. All these effects are statistically significant at 1 percent.

We finally examine a set of institutional and informational constraints as drivers of the negative effects of ownership control and domestic ownership on management practices. We examine 14 institutional quality variables based on the subjective views of business environment of the firm owners or managers. A set of variables related to informational constraints are considered from the “Improving the Measurement of Innovation in Emerging Economies and Developing Countries” survey, which was fielded as a follow-up survey to the WBES in 19 countries in 2013. The informational factors appear to play a stronger role than the institutional factors in adoption of management best practices in both SSA and ROW. Our findings on SSA support studies that document lack of awareness of managerial underperformance as a potential cause for less structured management practices (Rivkin 2000; Gibbons & Roberts 2013; Bennett et al. 2015).

This study fills a knowledge gap that persists as data on the role of management practices is available only for a handful of countries in SSA.¹¹ Despite a steady progress in constructing cross-country datasets on management practices over the past two decades, data from SSA countries has been limited to only a handful of countries. To the best of our

¹¹ The World Management Survey (WMS), a comprehensive cross-country dataset on management practices, covers only seven countries from Sub-Saharan Africa.

knowledge, this study is the first to provide a comprehensive picture of the management best practices in SSA with the help of 25,005 firms spread across 41 countries in the region. Comparison of the key findings between SSA and ROW provide further insights into policy interventions in SSA to remove institutional and information barriers to management practices.

This study also contributes to the active literature on firm performance and productivity in SSA. In SSA, a range of external drivers including widespread differences in natural resource abundance (Abreha et al. 2021) and political instability (McMillan and Zeufack 2022) spread the firm productivity gap. A growing body of studies also highlight the importance of the internal drivers that can make a large difference in firm productivity through differences in investment in new technologies (Dennis et al. 2016), quality upgrade of products and inputs (Jones et al. 2019), location choices (Calderón 2021), informality (Diao et al. 2021), innovative business ideas (McKenzie 2017; Fafchamps and Quinn 2017), strategies to compete against import competition (Sutton 2012), management practices (McKenzie and Woodruff 2017) and business-to-business linkages (Abebe et al 2022). Our main contribution is to provide a deeper understanding of the barriers to structured management practices. The findings of this study is relevant for policy intervention in the context of Sub-Saharan Africa (SSA) where smallholdings and sole proprietorships predominate (Word Bank 2022).

The rest of the paper is organized as follows. Section 2 describes the data and introduces the key variables. In section 3, we discuss some stylized facts about ownership control, domestic ownership, and management practices based on descriptive statistics and conditional correlations. In section 4, we provide some evidence on the causal effect of ownership control on management practices. Section 5 discusses the relationship between firm productivity and management practices across different ownership types. In section 6, we highlight the role of institutional and informational factors as barriers to management practices. Section 7 concludes.

2. Data and Construction of Variables

We use a dataset consisting of 156,833 firms interviewed between 2006 and 2022 across 130 countries as part of the World Bank Enterprise Surveys (WBES). The SSA sample includes 25,005 firms from 41 countries, and most of the SSA countries have data from two rounds of WBES. Almost 65 percent of the SSA firms are in seven countries (Ethiopia, Kenya,

Madagascar, Nigeria, South Africa, Zambia, and Zimbabwe) making the distribution of firms uneven across countries in SSA. Detail descriptions of the dataset and variables are provided in appendix B.

We construct a score for management practices based on 10 indicators (fixed responses except for the variable measuring the percent of time spent by senior management in dealing with government regulations) classified into four categories: ICT, regulation, finance, and quality control (see appendix B). Table A1 provides summary statistics for each indicator. Following Bloom and Van Reenen (2007), we first obtain standardized values for each of these 10 indicators, and then calculate the composite management practices score by taking an unweighted average across these individual indicators. The difference in the average scores on management practices and its four subcomponents between SSA and ROW are statistically significant. There are 19 countries that overlap between the WBES data, and the dataset compiled by Bloom et al (2016), and the management practices scores in the matched sample show close correspondence.¹²

3. Ownership Structure and Management Practices: Some Stylized Facts

This section provides an overview of the distribution of firms and the level of management best practices across different ownership structures. We classify the ownership structure of the firm into three broad groups: (1) sole proprietorships, (2) partnerships and others, and (3) shareholding companies. We first compare the distribution of firms across these ownership structures between SSA and ROW, and then examine the difference in average ownership control and domestic ownership between SSA and ROW. We finally discuss the results on the conditional correlation between management practices and ownership control, as well as between management practices and domestic ownership.

3.1. Firm ownership structure

We find large differences in the ownership structure of firms not only between SSA (25,005 firms) and ROW (131,828 firms), but also across countries within SSA. As presented in table 1, more than 52 percent of firms are sole proprietors in SSA, compared to nearly 30 percent in ROW. On the other hand, 51 percent of the firms are shareholding firms in ROW compared to only 27 percent in SSA. There exists large variation in the incidence of sole

¹² A statistical test rejects the null hypothesis that the two managements scores are independent at 1% significance level. These 19 countries are Argentina, Brazil, Chile, China, Colombia, Ethiopia, Ghana, India, Kenya, Mexico, Mozambique, Myanmar, Nicaragua, Nigeria, Poland, Tanzania, Turkey, Vietnam, and Zambia.

proprietorship, from as low as 8.9 percent in South Africa to nearly 90 percent in Sierra Leone. Other countries that have a large share of sole proprietors include the Gambia (82 percent), Nigeria (80 percent), and Madagascar (79 percent). Apart from South Africa, the share of sole proprietors is low in Botswana (22 percent) and Kenya (30 percent).

The difference in the distribution of sole proprietors between SSA and ROW is not driven by any firm size group. The share of sole proprietors is consistently higher in SSA than ROW across all firm size groups (figure A1, panel A). It is important to note that the gap between SSA and ROW is larger for smaller firms hiring less than 30 employees. This suggests the prevalence of small-scale sole proprietorship in SSA. For firms hiring more than 100 employees, the gap in the share of sole proprietors between SSA and ROW is negligible.

3.2. Ownership control and domestic ownership

The concentration of ownership control across different ownership types is comparable between SSA and ROW. Our ownership control measure for shareholding firms and partnership firms in both regions averages at 72 percent and 62 percent, respectively (figure 1, panel A). As depicted in figure A1 (panel B), the average size of ownership control is higher in SSA than ROW across all firm size groups. We, however, do not observe any clear patterns to the gaps in the distribution of the ownership control across firm size groups between SSA and ROW. The gaps in ownership control between SSA and ROW are between 0 to 6 percentage points across firm size groups.

On average, the size of domestic ownership measure is higher in ROW compared to SSA across the board (figure 1, panel B). Among shareholding firms, the gap is nearly 14 percentage points (75 percent in SSA against 89 percent in ROW). Among partnership firms, we find a similar gap of 15 percentage points (77 percent in SSA against 92 percent in ROW). However, the gap reduces to 7 percentage points (89 percent in SSA against 96 percent in ROW) among sole proprietors. It is important to note that domestic ownership, on average, is lower in sole proprietorships than shareholding or partnership firms in both regions. Turning to the distribution of domestic ownership across firm size groups, we find domestic ownership to be consistently higher in ROW than SSA across all firm size groups (figure A1, panel C).

A quick look at the kernel density plots of the ownership control and domestic ownership suggests that for both variables, there is a large overlap of density plots between SSA and ROW (figure A2). The share of firms with large ownership control (70 percent or higher share) is higher in SSA than ROW. We find an opposite picture for domestic

ownership: a larger share of firms in ROW has large domestic ownership (50 percent or more) than SSA. Overall, the difference in the pattern of ownership control and domestic ownership between SSA and ROW across different ownership types appears less prominent than the difference in the ownership structure of the firm between SSA and ROW.

3.3. Management Practices

We find sole proprietorships, on average, are less efficiently managed than partnership and shareholding firms in both SSA and ROW. The average score on management practices is negative only for sole proprietorships in both regions. There exist some regional differences in management practices across ownership types. The average management practices score is comparable between SSA and ROW for partnership and shareholding firms (figure 2, panel A). However, for sole proprietors, the adoption of management best practices is lower in SSA (-0.27) than ROW (-0.21). Similar findings are reflected in the density plots in Figure 3, and this could be linked to the findings that family-owned firms are less efficiently managed (Bloom et al 2007; Bertrand et al. 2008; Cai et al. 2013; McKenzie and Woodruff 2017; Bennett et al 2017; Lemos and Scur 2018). The distributions of management practices scores for shareholding and partnership firms overlap to a large extent between SSA and ROW. The distribution of management practices scores is slightly rightward skewed for SSA compared to ROW, which is entirely driven by sole proprietorships.

Turning to sectors, the average management practices score is negative for all sectors (light manufacturing, heavy manufacturing, wholesale and retail trade, and other services) in SSA and ROW, which is driven by sole proprietorship (figure 2, panel B). Regional differences are more prominent in light manufacturing based on the average score; the average management practice score is almost 0.12 higher in SSA (-0.04) than in ROW (-0.16). However, the density plots of management practices by sector show a slightly different picture with almost perfect overlap in services sectors, but a more rightward skewed distributions in SSA compared to ROW in manufacturing sectors (figure A3). A higher average score in manufacturing in SSA than ROW is possibly driven by a longer right-tail of the distribution for SSA compared to ROW.

Except for wholesale and retail trade, the average score is higher in SSA than ROW across all sectors. This suggests that sole proprietorships in wholesale and retail trade are likely to be primarily responsible for the lower adoption of management practices in SSA compared to ROW. Figure 4 compares the scores for four subcomponents of management practices between SSA and ROW. The left-tail of the regulation score distribution is slightly

heavier for ROW than SSA. On the other hand, the right-tail of the finance score distribution is slightly heavier for ROW than SSA. We do not find any strong evidence for a particular subcomponent of management practices driving the difference in the distribution of management practices scores between SSA and ROW.

Finally, we present some evidence on how sole proprietorships are managed across different regions and countries. Figure 5 arranges the SSA countries in terms of low to high average management practices score among sole proprietorships. Sole proprietorships in Cote d'Ivoire, Angola and Madagascar are among the countries with the lowest average scores, whereas Botswana, Eswatini, and Central African Republic are in the top three spots. The SSA average (-0.22) is much lower than the ROW average (-0.16) for sole proprietorships conforming to the density plots in figure 3. Almost one third of the SSA countries (13 out of 41) are above the ROW average, which demonstrates large cross-country variation in the adoption of management best practices even within sole proprietorships.

At the country level, despite considerable overlap between SSA and ROW countries in terms of management practices and sole proprietorships, ROW countries (in blue) are predominantly located in the north-west corner, whereas a majority of the SSA countries concentrate in the south-east corner (figure 6). The relationship between management practices and sole proprietorship is also negative within the SSA and ROW sample. Overall, the evidence overwhelmingly suggests that the average management practices score is negatively correlated with the sole proprietorship share of total firms.

3.4. The role of ownership control

In our baseline regression model explaining the differences in management practices across firms, we control for firm size, firm age, and geography (Bloom et al. 2017; McKenzie and Woodruff 2017; Bloom et al. 2019). The economic geography literature documents that the average productivity of firms tends to be higher in densely clustered markets, and the productivity of firms and workers increases with local density of economic activities with elasticities that range from 0.4 to 0.7 (Ciccone and Hall 1996; Syverson 2004; Rosenthal and Strange 2008; Combes, et al 2007; Morikawa 2011). As no direct question is available on the density of economic activities in the WBES, we construct a categorical variable of population density (1 if the population size is less than 250,000, 2 if the population size is between 250,000 and 1 million, and 3 if the population size is over a million). We use the proportion of firms in each population cluster to total number of firms in the country as a proxy measure for firm density.

In table 2, we present the outcomes on ownership control. The first four columns of table 2 shows the results for SSA, and the last four columns show the estimates for ROW. We control for country, industry (2-digit ISIC level) and time fixed effects. Following the specification of McKenzie and Woodruff (2017), we allow for industries to vary by country using industry \times country dummies. Some countries have multiple rounds of repeated cross-sectional data, and we use year dummies to control for any bias arising from the unobservable variables over time. We find that concentration of control is associated with poorer management practices. The negative correlation between ownership control and management practices is statistically significant across all models in SSA and ROW. Since all regressions include country, country \times ISIC two-digit sector, and year dummies, the coefficients of ownership control essentially reflect its negative relationship with management practices across firms within two-digit ISIC sectors in each country and the year of survey.

The first column in table 2 shows the bivariate correlation between management practices and ownership control to be -0.197 in SSA. As we add other correlates of management practices, the size of the coefficient of ownership control keeps getting smaller from -0.197 to -0.082, suggesting that a significant portion of the gap in management practices due to ownership control is explained by firm density, log firm age and log firm size. This outcome is not surprising as older and larger firms are, on average, better managed than younger and smaller firms. Similar evidence is found for ROW, where the coefficient of ownership control drops from -0.186 to -0.105 after adding the control variables. Overall, the correlation between management practices and ownership control is negative and statistically significant for both SSA and ROW, with other drivers (covariates) explaining around 60% of the variation due to ownership control.

Since ownership control does not vary among sole proprietorships, we run regressions separately for firms that are not sole proprietorships. As shown in the first column of table 3, the relationship between ownership control and management practices turns out to be positive and statistically insignificant for other firms in SSA, whereas it is still negative and statistically significant for other firms in ROW (column 5 in table 3).

3.5. The role of domestic ownership

The correlation between management practices and domestic ownership is statistically significant for both sole proprietorships and other ownership types in SSA (columns 2 to 4 in table 3). In ROW, the coefficient of domestic ownership is positive and statistically

insignificant for sole proprietorships, and it is negative but statistically insignificant for other ownership types. For ROW, the coefficient of ownership control remains negative and statistically significant after adding domestic ownership as a covariate in the regression.

We present the results for the entire sample from SSA and ROW in column 4 and column 8 in table 3, respectively. For SSA, the coefficient of domestic ownership is larger than the coefficient of ownership control, though both are statistically significant. An increase in ownership control from the 10th to 90th percentile accounts for the 90-10 spread in management practices by 10 percent in SSA, and 4.5 percent in ROW. And an increase in the domestic ownership from the 10th to 90th percentile accounts for the 90-10 spread in management practices by 14.2 percent in SSA, and 2.7 percent in ROW. At the same time, an increase in the log firm size from the 10th to 90th percentile accounts for the 90-10 spread in management practices by 14.5 percent in SSA, and 17.4 percent in ROW. Thus, domestic ownership and log firm size explain comparable level of variation in management practices in SSA. On the other hand, ownership control remains a stronger correlate of management practices than domestic ownership in ROW and log firm size remains by far the strongest predictor of the variation in management practices in ROW.

Overall, the evidence suggests that both ownership control and domestic ownership is strongly negatively correlated with management practices in SSA and ROW. For both variables, the correlations are stronger in ROW compared to SSA. The outcomes are robust at the sector level (see appendix C). However, the results are less robust across subcomponents of management practices score in SSA compared to ROW, primarily due to the difference in ICT and finance score across different levels of firm ownership control (see appendix C).

3.6. Country-level outcomes in SSA

Almost 65 percent of the SSA sample of 25,005 firms come from only six countries: Ethiopia, Kenya, Madagascar, Nigeria, South Africa, Zambia, and Zimbabwe. Each of these SSA countries have two rounds of WBES data. In table 4, we present the country-level findings for each of these seven countries. We consider another group - other (OTH) – comprising firms from the rest of the SSA countries. Results are robust at the country level. The coefficients of domestic ownership are statistically significant for a majority of the countries when we do not include other control variables in the regression (panel A in table 4). As noted for the full SSA sample before, domestic ownership predominates. Log firm size explains the largest variation in management practices after we control for firm age, and firm density in the regression (panel B in table 4). Larger firms are better managed across the

board and the outcomes are statistically significant in Kenya, Madagascar, Nigeria, and Zambia.

To sum up, the empirical outcomes discussed so far suggests that ownership control and domestic ownership matter for differences in management practices. In SSA, management practices are more strongly correlated with domestic ownership than (foreign?) ownership control. In ROW, the opposite outcome holds. The differences in the adoption of management practices between SSA and ROW is strongly correlated with domestic ownership among sole proprietorships.

4. Management practices and Ownership Control: Causal Effects

4.1. Binary treatment effects

The empirical outcomes based on conditional correlation suggests that firm ownership control and domestic ownership matter for management practices even after controlling for potentially confounding covariates such as firm age, firm size, and firm density. In this section, we examine if the evidence on the relationship between ownership control and management practices is causal using both binary and multivalued treatment assignments.

Firms are different not only based on the observed characteristics but also in a set of unobservable characteristics, which makes the identification of causal effect of any factor on firm performance challenging. To address the problem of missing data, we follow the standard treatment effect literature. We use a potential-outcome framework to obtain the potential management practices score that each firm would obtain at different levels of ownership control. For robustness purpose, we consider four different estimators to impute the missing data arising from the fact that each firm is observed in only one of the potential outcomes on management practices conditioned by the level of ownership control. First, we use logit model to compute the propensity scores (PSM) or probabilities of being at an ownership control level. Then, we impute the missing potential outcome for each firm by considering an average of the propensity scores of similar firms at another level of ownership control. Our second estimator follows the nearest neighbour (NNM) method in which matching is based on a weighted function of the covariates for each firm. In both matching methods, the average treatment effect (ATE) is the average of the difference between the observed and potential outcomes for each firm.

Our third estimator obtains the parameters of the treatment model and compute the estimated inverse-probability weights. Then the inverse-probability-weighted (IPW) estimator uses the estimated inverse-probability weights to compute weighted averages of the

management practices score for each level of ownership control. The ATEs are estimated based on the differences of these weighted averages. Finally, we implement Inverse-probability-weighted regression-adjustment (IPWRA) estimator, which models both the outcome and the treatment probability and produces doubly robust estimates as only one of the two models must be correctly specified to consistently estimate the treatment effects (Wooldridge 2010). This estimator fits separate regressions for each ownership control level and uses weighted regression coefficients to compute averages of treatment-level predicted outcomes, where the weights are the estimated inverse probabilities of treatment. The differences of these averages of management practices score across treatment levels (ownership control) yields the ATEs. The last two estimators are smooth functions of the data so that standard methods approximate the distribution of the estimator, which is not the case for PSM or NNM estimators.

Table 5 presents the results for binary treatment effects. The first and the second column contain outcomes from the PSM and NNM estimator, respectively. The third column shows the outcomes from the IPW, and the outcomes from the IPWRA estimator are in column 4. We examine four binary treatment cases. The first binary treatment evaluates the effect of full ownership control. The results of this treatment are shown in panel A. The estimated ATE on management practices score of going from less than full ownership control to full ownership control ranges between -0.92 to -0.153 and -0.015 to -0.164 for SSA and ROW, respectively. The evidence is robust and statistically significant at 1 percent across different estimators in both SSA and ROW. In SSA, the size of the ATE is larger with matching estimators (PSM and NNM) than IPW and IPWRA. But they are more comparable in ROW. Next, we examine the effect of full domestic ownership (panel B). The average management practices score if all firms had full domestic ownership would be lower than the average that would occur if none of the firms had full domestic ownership. This outcome is also robust and statistically significant across different estimators in both SSA and ROW. Similar results are obtained for full domestic ownership but with a smaller sample of firms consisting of only sole proprietors in both regions (panel C).

Finally, we evaluate the effect of sole proprietorship on management practices. The results are shown in panel D. The average management practices score if all firms were sole proprietors would be less than the average that would occur if none of the firms were sole proprietors. Similar to other treatment effects, the ATEs are statistically significant and robust across different estimators in both SSA and ROW. For each estimator, the magnitude of the

ATE is lower in SSA than ROW, suggesting a larger negative average effect on management practices score if a firm is sole proprietorship in SSA than in ROW. Overall, the outcomes from the binary treatment models suggest a strong negative causal effect of ownership control and domestic ownership on management practices.

4.2. Multivalued treatment effects

In the case of binary treatment, we collapsed the multi-valued treatment status into a binary category, which is each firm either has a full ownership control, or it does not have full ownership control. While the results discussed in the previous section based on binary assignments are useful, it comes at the cost of a loss of information as non-linearities and differential effects across multiple treatment levels cannot be captured through binary treatments. We now relax this constraint, and consider multivalued treatments related to different levels of ownership control and domestic ownership.

As multivalued treatments increase the number of parameters to be estimated, we apply IPWRA estimator adapted to the case of multivariate discrete treatments (Cattaneo 2010). We generate a discrete ownership control variable with four categories: the share of the largest owner less than 50 percent (= 1), between 50 to 70 percent (= 2), between 70 to 100 percent (= 3), and equals to 100 percent (= 4). Sole proprietors with full control over firm ownership fall in the fourth category. We create a similar categorical variable for domestic ownership: the share of domestic ownership is less than 10 percent (= 1), between 10 and 50 percent (= 2), between 50 and 100 percent (= 3), and equals to 100 percent (= 4). The distribution of firms is comparable between SSA and ROW across different categories of ownership control and domestic ownership.

Table 6 (panel A) presents the outcomes on multivalued ownership control effects. We estimate the treatment effects based on the full sample of firms (the first column) and a sample of firms excluding sole proprietorships (the second column). The estimated potential-outcome average management practices score of the control group, i.e., firms with below 50 percent ownership control are 0.040 and -0.020 in SSA and ROW, respectively. The ATE on management practices score of going from less than 50 percent ownership control to full ownership control is -0.136 and -0.147 for SSA and ROW, respectively. Exclusion of sole proprietorship from the sample (column 2) does not change the results. All these effects are statistically significant at 1 percent. Non-linearity in treatment effects is evident for both the full sample and a smaller sample of firms without sole proprietorships. Turning to ROW, we

also non-linear outcomes in the treatment effects. The magnitude of the treatment effect is comparable between SSA and ROW across different models.

In panel B of table 6, we report the outcomes on multivalued domestic ownership effects. We first discuss the full sample results. The estimated potential-outcome average management practices score of the control group, i.e., firms with below 10 percent domestic ownership level is 0.006 and -0.111 in SSA and ROW, respectively. In the case of multivalued treatment effects, the negative ATE on management practices score is driven by the group of firms with full domestic ownership (level 4) in both SSA and ROW. For the sample of firms excluding sole proprietorships, the negative ATE on management practices score is driven by firms that belongs to full domestic ownership (level 4) and 10 to 50 percent of domestic control (level 2).

To conclude, evidence from both binary and multivalued ownership control variables suggest strong negative causal effect of ownership control and domestic ownership on management practices. However, the sign and the magnitude of the causal effects on management practices differ across different levels of ownership control and domestic ownership, and the non-linearity in causal effects are not uniform across firms in SSA and ROW.

5. Firm productivity and management practices in sole proprietorships

The purpose of this section is to investigate whether differences in management practices is correlated with differences in firm productivity between sole proprietorships and other types of firms. Following the literature, we estimate a standard production function with log sales (the outcome variable) as a function of management practices. The key findings from this exercise are: (1) Sole proprietorships on average are less productive than other ownership types in SSA by 32 percent and by 13 percent in ROW. Management practices is positive and strongly corelated with log sales in both SSA and ROW; (2) Differences in management practices accounts for almost 20 percent of the difference in productivity between sole proprietorships and other ownership types in SSA compared to 15 percent in ROW, and (3) Differences in management practices account for between 18 to 50 of the difference in productivity between sole proprietorships and other ownership types across SSA countries. In some countries, such as Nigeria, and South Africa, however differences in management practices are not correlated with differences in productivity among sole proprietorships. See appendix D for further details.

6. Barriers to the Adoption of Management Best Practices

In this section, we draw some insights into the potential barriers to the adoption of good management practices in SSA and ROW. As highlighted in the literature, a range of institutional factors can prohibit a firm to standardize its management practices (Rajan 2012; Bandiera, et al 2013), in addition to low-skill level of owner-cum-manager (Perez-Gonzales 2006; Bennedsen et al. 2007; Bloom et al. 2013), lack of awareness of managerial underperformance (Rivkin 2000; Gibbons & Roberts 2013; Bennett et al. 2015), and implicit employment commitments that could also lower the returns to investment in good management practices (Ellul et al. 2014; Bach & Serrano-Velarde 2015; Lemos and Scur 2018). We examine both a set of institutional and informational constraints to understand if they condition the negative effects of ownership control and domestic ownership on the adoption of management practices.

We examine 14 institutional quality variables based on the subjective views of business environment of the firm owners or managers. A set of variables related to informational constraints are considered from the “Improving the Measurement of Innovation in Emerging Economies and Developing Countries” survey, which was fielded as a follow-up survey to the WBES in 19 countries in 2013. A total of 8685 firms from 15 countries in SSA and four in South Asia were revisited to collect firm-level data on product innovation, process innovation, organizational innovation, and marketing innovation. We merge the innovation round data into the WBES data. In Appendix E, we explain in detail how we construct these variables and present the empirical outcomes. In firms with comparable ownership control in SSA, the adoption of management best practices, on average, is lower if they report to be in an environment with a higher business environment score. However, the outcomes are mostly statistically insignificant. Similar evidence is obtained for SSA countries, and ROW.

In table 7, we present the outcomes on informational constraints. In SSA, among firms with comparable ownership control, the chances of having a more structured management practices, on average, is higher if the firm managers have prior knowledge over management practices (column 1, table 7). This is in line with a growing literature supporting the role of the lack of awareness about management practices (Rivkin 2000; Bloom and Van Reenen 2007; Gibbons & Roberts 2013; Bennett et al. 2015). The role of knowledge over management practices do not seem to play any such role among firms with comparable domestic ownership. New recruitment strategy (column 2, table 7) and monitoring of performance indicators (column 3, table 7) also increase the chances of having more

structured management practices, but the results are not statistically significant. On the other hand, for firms in ROW, only introduction of new recruitment strategy is positively correlated with management best practices (column 5, table 7), and the outcome is statistically significant.

Overall, the informational factors appear to play a stronger role than the institutional factors in adoption of management best practices in both SSA and ROW. Our findings on SSA support studies that document lack of awareness of managerial underperformance as a potential cause for less structured management practices (Rivkin 2000; Gibbons & Roberts 2013; Bennett et al. 2015).

7. Concluding remarks

It is understood that policy interventions that focus on structured management practices to enhance firm capacity and productivity growth can be effective. This paper goes one step further to understand the role of ownership control as barriers to adoption of management best practices. We provide comprehensive evidence using a large sample of firms across 130 countries that firms with higher ownership control is less likely to adopt management best practices. Almost 52 percent of total firms are sole proprietorships exerting full ownership control in SSA compared to only 30 percent in ROW, which primarily explains a persistent gap in the average management practices score between SSA (-0.096) and ROW (0.023). Moreover, lack of awareness about management practices in SSA also plays a crucial role.

A question that naturally arises: can growing awareness about management best practices increase adoption of structured management practices? The experimental evidence on the effect of awareness on management best practices remains largely inconclusive.¹³ A potential area of future research is to understand the factors that restrict awareness for management practices, which is particularly relevant for SSA, as documented in this paper. In addition, further insights into the institutional and socioeconomic factors that form different types of ownership structure can be useful to understand why management best practices vary across ownership structures. This is particularly relevant in the context of SSA, characterised by a large share of smallholdings and sole proprietorships (World Bank 2022).

¹³ See Bloom et al. (2013), McKenzie and Woodruff (2013), Fafchamps and Woodruff (2017), McKenzie and Woodruff (2017), Bruhn et al. (2018), Campos et al. (2017), Anderson et al. (2018) and Abebe et al. (2019).

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Table 1. Firm Ownership Types Across Sub-Saharan African Countries

	All firms	Sole Proprietors (%)	Partnership and other (%)	Shareholding (%)
Angola	416	51.2	19.5	29.3
Benin	275	54.6	2.6	42.9
Botswana	344	20.9	34.6	44.5
Burkina Faso	316	68.7	3.5	27.9
Burundi	246	54.9	9.4	35.8
Cameroon	664	69.3	8.4	22.3
Cape Verde	135	44.4	8.9	46.7
Central African Republic	133	51.9	27.8	20.3
Chad	298	60.1	11.4	28.5
Côte d'Ivoire	700	69.7	5.4	24.9
Democratic Rep. of Congo	830	68.2	15.1	16.8
Eritrea	118	51.7	39.8	8.5
Eswatini	204	33.8	29.9	36.3
Ethiopia	1,119	63.0	30.9	6.1
Gambia	179	73.7	12.9	13.4
Ghana	837	64.2	24.4	11.5
Guinea	215	70.2	9.8	20.0
Guinea Bissau	49	67.4	16.3	16.3
Kenya	1,933	27.4	40.0	32.6
Lesotho	145	51.7	37.2	11.0
Liberia	151	62.3	29.8	8.0
Madagascar	1,072	64.4	5.4	30.2
Malawi	474	47.3	32.3	20.5
Mali	687	72.3	4.5	23.1
Mauritania	146	37.0	15.8	47.3
Mauritius	350	47.4	8.0	44.6
Mozambique	942	64.7	27.5	7.9
Namibia	418	34.5	43.1	22.5
Niger	223	69.5	4.9	25.6
Nigeria	2,803	77.9	11.7	10.4
Rwanda	606	57.9	13.7	28.4
Senegal	687	69.0	10.8	20.2
Sierra Leone	151	73.5	22.5	4.0
South Africa	1,735	8.9	9.2	81.9
South Sudan	677	42.5	41.2	16.3
Sudan	239	69.9	27.2	2.9
Tanzania	766	54.6	16.1	29.4
Togo	259	53.3	2.3	44.4
Uganda	791	53.9	23.4	22.8
Zambia	1,489	37.3	31.2	31.5
Zimbabwe	1,183	24.8	40.2	35.1
SSA	25,005	52.4	20.6	27.1
ROW	131,828	29.9	18.8	51.3
Total	156,833	33.5	19.1	47.5

Source: Authors' estimates based on the World Bank Enterprise Survey data.

Notes: [1] Geographic regions follow World Bank classifications. SSA = Sub-Saharan Africa, ROW = Rest of the World (East Asia and the Pacific + Eastern Europe and Central Asia + Latin America and the Caribbean + Middle East and North Africa + South Asia).

[2] Sole proprietorship is defined as a business owned and run by a single person who has no legal distinction between the owner and the business. A partnership is a business association of two or more persons who have formally agreed to work together, each contributing skills, labour, and capital to the venture in return for an agreed share of the profits/loss specified in the partnership agreement. Shareholding company is a type of company that offers limited liability or legal

protection for its shareholders but places certain restrictions on its ownership. It shares may or may not be offered to the general public.

Table 2. Management Practices and Ownership Control

	SSA				ROW			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ownership control	-0.197** (0.077)	-0.196** (0.076)	-0.165** (0.060)	-0.082*** (0.023)	-0.186*** (0.036)	-0.186*** (0.037)	-0.179*** (0.035)	-0.105*** (0.024)
Firm density		0.086 (0.069)	0.099 (0.067)	0.051 (0.052)		0.056 (0.053)	0.051 (0.052)	0.045 (0.049)
Log firm age			0.089** (0.036)	0.038*** (0.010)			0.055*** (0.011)	0.024* (0.012)
Log firm size (employment)				0.120** (0.050)				0.148*** (0.009)
Constant	0.101 (0.067)	0.052 (0.058)	-0.220** (0.083)	-0.489** (0.181)	0.045 (0.031)	0.017 (0.044)	-0.140** (0.064)	-0.523*** (0.057)
N	24,773	24,773	24,389	24,243	129,510	129,510	128,687	128,386
R ² -statistic	0.272	0.272	0.292	0.358	0.367	0.367	0.374	0.451

Source: Authors' estimates based on the World Bank Enterprise Survey data.

Notes: [1] Clustered (country × ISIC 2-digit sector) standard errors are in parenthesis.

[2] All regressions include country, country × ISIC 2-digit sector, and year dummies.

[3] Firm density is a categorical variable indicating different levels of population density. It takes the value 1 if population size is less than 250,000; 2 if population size is between 250,000 and 1 million, and 3 if population size over a million.

[4] Dependent variable is management practices score, which is an unweighted average of standardized scores over 10 indicators: These 10 indicators measure if a firm (1) has internationally-recognized quality certification; (2) communication with clients and suppliers by email; (3) has its own website; (4) paid for security in last fiscal year (FY); (5) spent percent of senior management time in dealing with govt regulations; (6) has a checking and saving account; (7) has an overdraft facility; (8) inspected by tax officials in last FY; (9) has financial statements checked & certified by external auditor; (10) has formal training programs for full-time employees in last FY.

[5] SSA = Sub-Saharan Africa, ROW = Rest of the World (East Asia and the Pacific + Eastern Europe and Central Asia + Latin America and the Caribbean + Middle East and North Africa + South Asia).

Table 3. Management Practices, Ownership Control, and Domestic Ownership

	SSA				ROW			
	Other ownership types		Sole proprietors	All firms	Other ownership types		Sole proprietors	All firms
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Ownership control	0.045 (0.041)	0.041 (0.044)		-0.080*** (0.020)	-0.035** (0.016)	-0.035** (0.016)		-0.035** (0.016)
Domestic ownership		-0.109*** (0.036)	-0.096** (0.033)	-0.114*** (0.031)		-0.021 (0.028)	0.064 (0.050)	-0.021 (0.028)
Firm density	-0.011 (0.064)	-0.005 (0.069)	0.079 (0.061)	0.060 (0.052)	0.039 (0.030)	0.038 (0.029)	0.060 (0.070)	0.038 (0.029)
Log firm age	0.045** (0.020)	0.045** (0.020)	0.014 (0.013)	0.039*** (0.011)	0.021** (0.009)	0.021** (0.008)	0.029* (0.016)	0.021** (0.008)
Log firm size (employment)	0.095* (0.052)	0.093* (0.051)	0.197*** (0.014)	0.116** (0.050)	0.137*** (0.007)	0.137*** (0.007)	0.154*** (0.011)	0.137*** (0.007)
Constant	-0.475** (0.211)	-0.365 (0.238)	-0.715*** (0.038)	-0.388* (0.200)	-0.469*** (0.031)	-0.447*** (0.050)	-0.806*** (0.101)	-0.447*** (0.050)
N	10,904	10,853	12,553	23,597	87,324	87,072	38,386	87,072
R ² -statistic	0.332	0.336	0.469	0.366	0.453	0.454	0.434	0.454

Source: Authors' estimates based on the World Bank Enterprise Survey data.

Notes: [1] Clustered (country × ISIC 2-digit sector) standard errors are in parenthesis.

[2] All regressions include country, country × ISIC 2-digit sector, and year dummies.

[3] For variable descriptions, see notes in Table 1 and Table 2.

Table 4. Correlates of Management Practices in Sub-Saharan African Countries

	ETH	KEN	MDG	NGA	ZAF	ZMB	ZWE	OTH
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>A. Without controls</i>								
Ownership control	-0.310 (0.071)	-0.185* (0.049)	-0.185 (0.082)	-0.140 (0.051)	-0.119 (0.188)	-0.176 (0.122)	-0.299 (0.080)	-0.149 (0.096)
Domestic ownership	-0.307 (0.076)	-0.184** (0.036)	-0.313* (0.106)	-0.151** (0.009)	-0.211* (0.022)	-0.144 (0.054)	-0.071 (0.124)	-0.201*** (0.018)
Constant	0.485 (0.079)	0.337** (0.062)	0.107 (0.053)	-0.078 (0.048)	0.287 (0.183)	0.239 (0.130)	0.276 (0.063)	0.272** (0.091)
N	1,174	1,902	1,056	2,722	1,726	1,461	1,118	11,159
R ² -statistic	0.155	0.181	0.305	0.260	0.221	0.152	0.204	0.252
<i>B. With controls</i>								
Ownership control	-0.042 (0.067)	-0.093 (0.042)	-0.017 (0.140)	0.008 (0.072)	-0.039 (0.060)	-0.046 (0.126)	-0.162 (0.065)	-0.052** (0.021)
Domestic ownership	-0.159 (0.059)	-0.097 (0.037)	-0.112* (0.031)	-0.084 (0.015)	-0.139 (0.064)	-0.064 (0.049)	-0.034 (0.054)	-0.130** (0.041)
Firm density	0.248 (0.071)	0.227* (0.061)	0.048 (0.059)	0.199* (0.022)	-0.221 (0.084)	-0.134 (0.095)	-0.044 (0.128)	0.067 (0.087)
Log firm age	0.074 (0.048)	0.023* (0.007)	-0.059 (0.070)	0.000 (0.015)	0.043 (0.024)	0.070** (0.007)	0.077 (0.023)	0.042*** (0.013)
Log firm size (employment)	0.119* (0.018)	0.123*** (0.009)	0.206** (0.042)	0.161** (0.009)	0.092 (0.089)	0.151** (0.019)	0.150 (0.026)	0.102* (0.056)
Constant	-0.587 (0.111)	-0.335* (0.080)	-0.656*** (0.036)	-0.790* (0.075)	-0.149 (0.376)	-0.527*** (0.031)	-0.469* (0.071)	-0.348 (0.250)
N	1,154	1,879	1,045	2,596	1,718	1,445	1,095	10,932
R ² -statistic	0.295	0.305	0.444	0.373	0.292	0.319	0.360	0.326

Source: Authors' estimates based on the World Bank Enterprise Survey data.

Notes: [1] Clustered (ISIC 2-digit sector) standard errors are in parenthesis.

[2] All regressions include ISIC 2-digit sector, and year dummies.

[3] ETH = Ethiopia, KEN = Kenya, MDG = Madagascar, NGA = Nigeria, ZAF = South Africa, ZMB = Zambia, OTH = Other countries in SSA sample.

[3] For variable descriptions, see notes in Table 1 and Table 2.

Table 5. Binary Treatment Effects on Management Practices Score

		Matching method		Inverse-probability-weights	Inverse-probability-weighted regression adjustment
		Propensity score	Nearest-neighbor		
A: Treatment: Full ownership control =1, 0 otherwise					
SSA	ATE	-0.153*** (0.005)	-0.149*** (0.004)	-0.092*** (0.002)	-0.100*** (0.002)
	Average (Control)			-0.006 (0.001)	0.002 (0.001)
ROW	ATE	-0.164*** (0.001)	-0.154*** (0.001)	-0.150*** (0.000)	-0.152*** (0.000)
	Average (Control)			-0.010*** (0.000)	-0.012 (0.000)
B. Treatment: Full domestic ownership =1, 0 otherwise					
SSA	ATE	-0.124*** (0.006)	-0.096*** (0.006)	-0.098*** (0.002)	-0.115*** (0.002)
	Average (Control)			0.015*** (0.002)	0.033*** (0.002)
ROW	ATE	-0.071*** (0.002)	-0.067*** (0.001)	-0.023*** (0.001)	-0.032*** (0.001)
	Average (Control)			-0.090*** (0.001)	-0.081*** (0.001)
C. Treatment: Full domestic ownership =1, 0 otherwise (Sole proprietor sample)					
SSA	ATE	-0.054*** (0.008)	-0.043*** (0.008)	-0.052*** (0.004)	-0.062*** (0.004)
	Average (Control)			-0.177*** (0.004)	-0.168*** (0.004)
ROW	ATE	-0.062*** (0.005)	0.033*** (0.004)	0.129*** (0.001)	0.119*** (0.001)
	Average (Control)			-0.373*** (0.001)	-0.363*** (0.001)
D. Treatment: Sole proprietors = 1, 0 otherwise					
SSA	ATE	-0.146*** (0.006)	-0.118*** (0.005)	-0.050*** (0.003)	-0.083*** (0.002)
	Average (Control)			-0.029*** (0.001)	-0.029*** (0.001)
ROW	ATE	-0.175*** (0.001)	-0.181*** (0.001)	-0.150*** (0.000)	-0.159*** (0.000)
	Average (Control)			-0.041*** (0.000)	-0.041*** (0.000)

Source: Authors' estimates based on the World Bank Enterprise Survey data.

Notes: [1] ATE = Average treatment effects.

Table 6. Multivalued Treatment Effects on Management Practices Score

		Full sample	Firms other than sole proprietors
		Coeff / SE	Coeff / SE
A. Multivalued treatment ownership control			
SSA	ATE: Ownership control level 2	-0.079*** (-0.004)	-0.114*** (-0.004)
	ATE: Ownership control level 3	0.048*** (-0.005)	0.033*** (-0.006)
	ATE: Ownership control level 4	-0.136*** (-0.004)	-0.102*** (-0.004)
	POM (Control)	0.040*** (-0.004)	0.089*** (-0.004)
ROW	ATE: Ownership control level 2	-0.003*** (-0.001)	0.002*** (-0.001)
	ATE: Ownership control level 3	0.022*** (-0.001)	0.024*** (-0.001)
	ATE: Ownership control level 4	-0.147*** (0.000)	-0.076*** (-0.001)
	POM (Control)	-0.020*** (0.000)	0.008*** (0.000)
B. Multivalued treatment domestic ownership			
SSA	ATE: Domestic ownership level 2	0.052*** (-0.007)	-0.027*** (-0.008)
	ATE: Domestic ownership level 3	0.085*** (-0.005)	0.005 (-0.006)
	ATE: Domestic ownership level 4	-0.087*** (-0.003)	-0.140*** (-0.005)
	POM (Control)	0.006* (-0.003)	0.121*** (-0.005)
ROW	ATE: Domestic ownership level 2	0.104*** (-0.002)	-0.025*** (-0.002)
	ATE: Domestic ownership level 3	0.128*** (-0.001)	0.007*** (-0.001)
	ATE: Domestic ownership level 4	-0.002*** (-0.001)	-0.061*** (-0.001)
	POM (Control)	-0.111*** (-0.001)	0.046*** (-0.001)

Source: Authors' estimates based on the World Bank Enterprise Survey data.

Notes: [1] ATE = Average treatment effects

[2] Ownership control level 4 = 100 percent, level 3 = 70-100 percent, level 2 = 50-70 percent, and control group = below 50 percent. Domestic ownership level 4 = 100 percent, level 3 = 50-100 percent, level 2 = 10-50 percent, and control group = below 10 percent.

Table 7. Informational Constraints

	SSA			ROW		
	(1)	(2)	(3)	(4)	(5)	(6)
Ownership control	-0.235** (0.039)	-0.158*** (0.004)	-0.192 (0.042)	-0.390* (0.057)	-0.456* (0.059)	-0.213* (0.020)
Domestic ownership	-0.115*** (0.008)	-0.141* (0.036)	-0.194 (0.073)	-0.079 (0.081)	-0.135 (0.058)	-0.675 (0.479)
Learnt about management	-0.032 (0.035)			0.052 (0.177)		
Ownership control X Learnt about management	0.169* (0.052)			-0.068 (0.024)		
Domestic ownership X Learnt about management	-0.070* (0.019)			-0.048 (0.191)		
New recruitment strategy		-0.094 (0.193)			-0.173* (0.026)	
Ownership control X New recruitment strategy		0.252 (0.154)			0.161** (0.006)	
Domestic ownership X New recruitment strategy		-0.106 (0.060)			0.163 (0.033)	
Monitored performance indicators			-0.186** (0.012)			-0.506 (0.540)
Ownership control X Monitored performance indicators			0.188 (0.100)			-0.277 (0.059)
Domestic ownership X Monitored performance indicators			0.040 (0.008)			0.692 (0.579)
Firm density	0.087 (0.030)	0.021 (0.078)	0.023 (0.097)	0.192 (0.241)	0.135 (0.211)	0.151 (0.240)
Log firm age	0.050 (0.019)	0.085** (0.019)	0.086 (0.036)	-0.017 (0.010)	-0.063* (0.010)	-0.080 (0.014)
Log firm size (employment)	0.192*** (0.005)	0.180*** (0.009)	0.189* (0.016)	0.173* (0.018)	0.164** (0.008)	0.169** (0.009)
Constant	-0.503*** (0.033)	-0.518*** (0.015)	-0.453** (0.026)	-0.118 (0.135)	0.128 (0.027)	0.558 (0.492)
N	3,843	1,273	1,137	4,820	3,221	3,132
R ² -statistic	0.420	0.499	0.481	0.467	0.431	0.418

Source: Authors' estimates based on the World Bank Enterprise Survey data and Improving the Measurement of Innovation in Emerging Economies and Developing Countries survey data.

Notes: [1] Clustered (country × ISIC 2-digit sector) standard errors are in parenthesis.

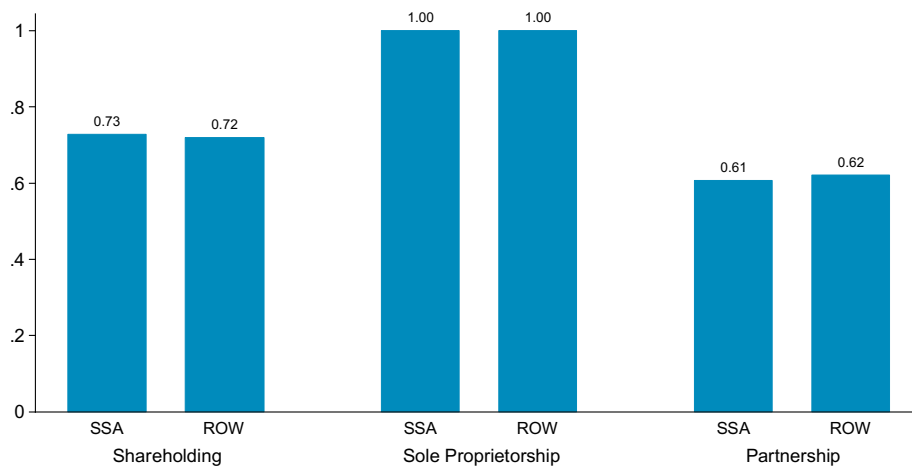
[2] All regressions include country, country × ISIC 2-digit sector, and year dummies.

[3] For variable descriptions, see notes in Table 1 and Table 2.

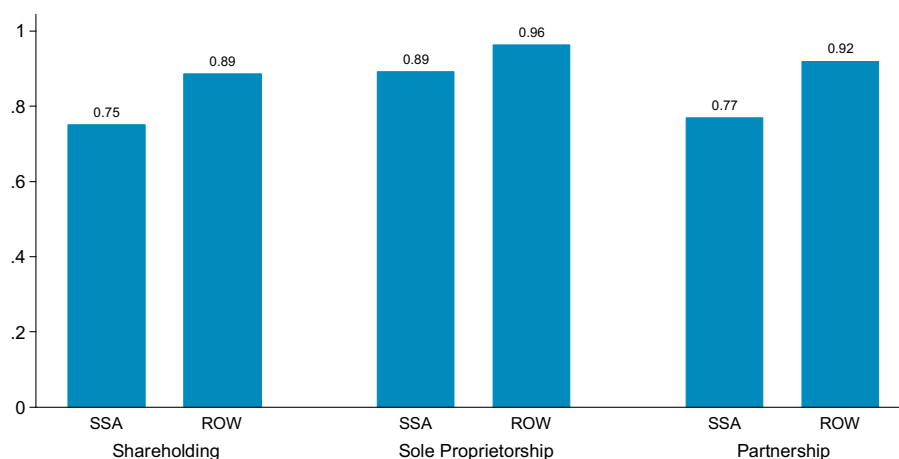
[4] *Heard about management practices* takes the value of one if any of the following is true: From fiscal year 2010 thru 2012, did the manager(s) at this establishment learn about management practices from suppliers or customers (hd6a), or from trade associations or workshops (hd6b), or from new employees (hd6c), or from competitors (hd6d), or from consultants (hd6e); otherwise, zero. *Firm introduced changes in the hiring of management staff (Yes / No)* is measured using the following question "From fiscal year 2010 thru 2012, did this establishment introduce any change in the method of hiring managerial and supervisory staff? (HD5)". *Firm monitored key performance indicators (Yes / No)* is measured using the following question "In fiscal year 2010, were key performance indicators monitored at this establishment? (HD11a)".

Figure 1. Ownership Control and Domestic Ownership, by Ownership Type

A. Ownership Control



B. Domestic Ownership



Source: Authors' estimates based on the World Bank Enterprise Survey data.

Notes: [1] Geographic regions follow World Bank classifications. SSA = Sub-Saharan Africa, ROW = Rest of the World (East Asia and the Pacific + Eastern Europe and Central Asia + Latin America and the Caribbean + Middle East and North Africa + South Asia). See

<https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups> for further information on World Bank lending and groups and regions.

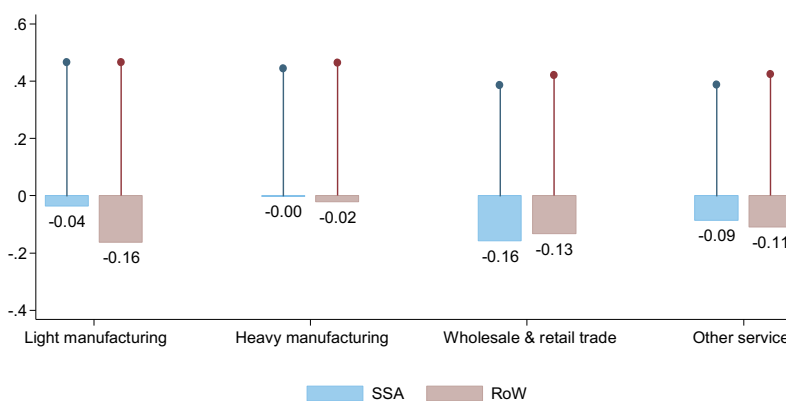
[2] For variable descriptions, see notes in Table 1 and Table 2.

Figure 2. Management Practices Scores, by Ownership Structure and Sector

A. By Ownership structure



B. By Sector



Source: Authors' estimates based on the World Bank Enterprise Survey data.

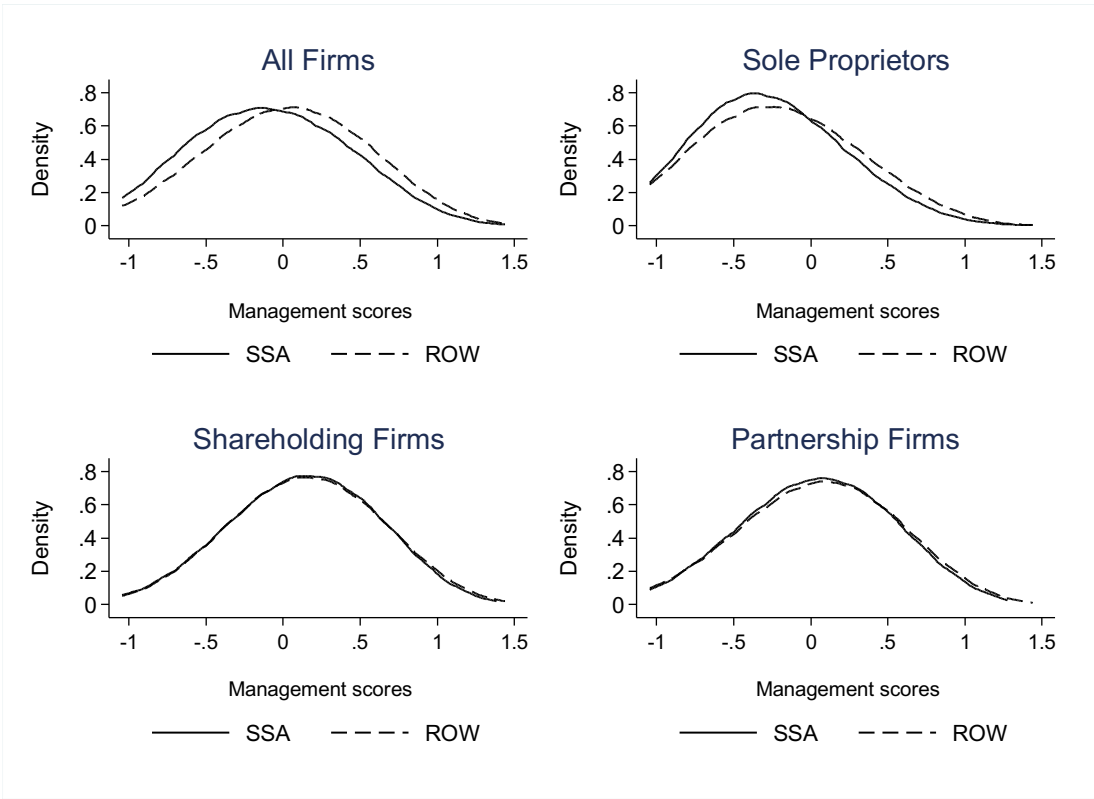
Notes: [1] Bars represent the average values, and droplines represent the standard deviations.

[2] Geographic regions follow World Bank classifications. SSA = Sub-Saharan Africa, ROW = Rest of the World (East Asia and the Pacific + Eastern Europe and Central Asia + Latin America and the Caribbean + Middle East and North Africa + South Asia). See <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups> for further information on World Bank lending and groups and regions.

[3] Light manufacturing includes food, beverages & tobacco, textiles & leather, wood, paper & publishing. Heavy manufacturing includes metals, non-metallic minerals, machinery & equipment, and construction. The broad sector groups follow the classification of ISIC 2-digit industries as shown in Table A1 (online appendix).

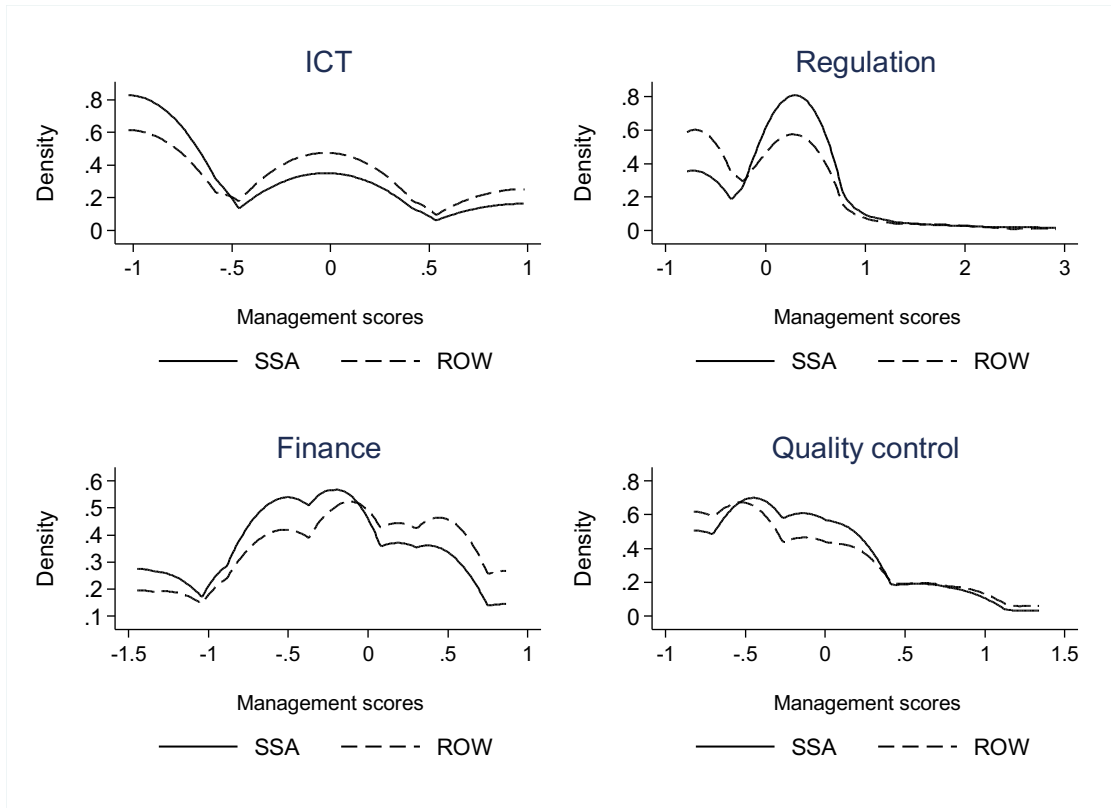
[4] For variable descriptions, see notes in Table 1 and Table 2.

Figure 3. Kernel Density Plots of Management Scores, by Ownership Type



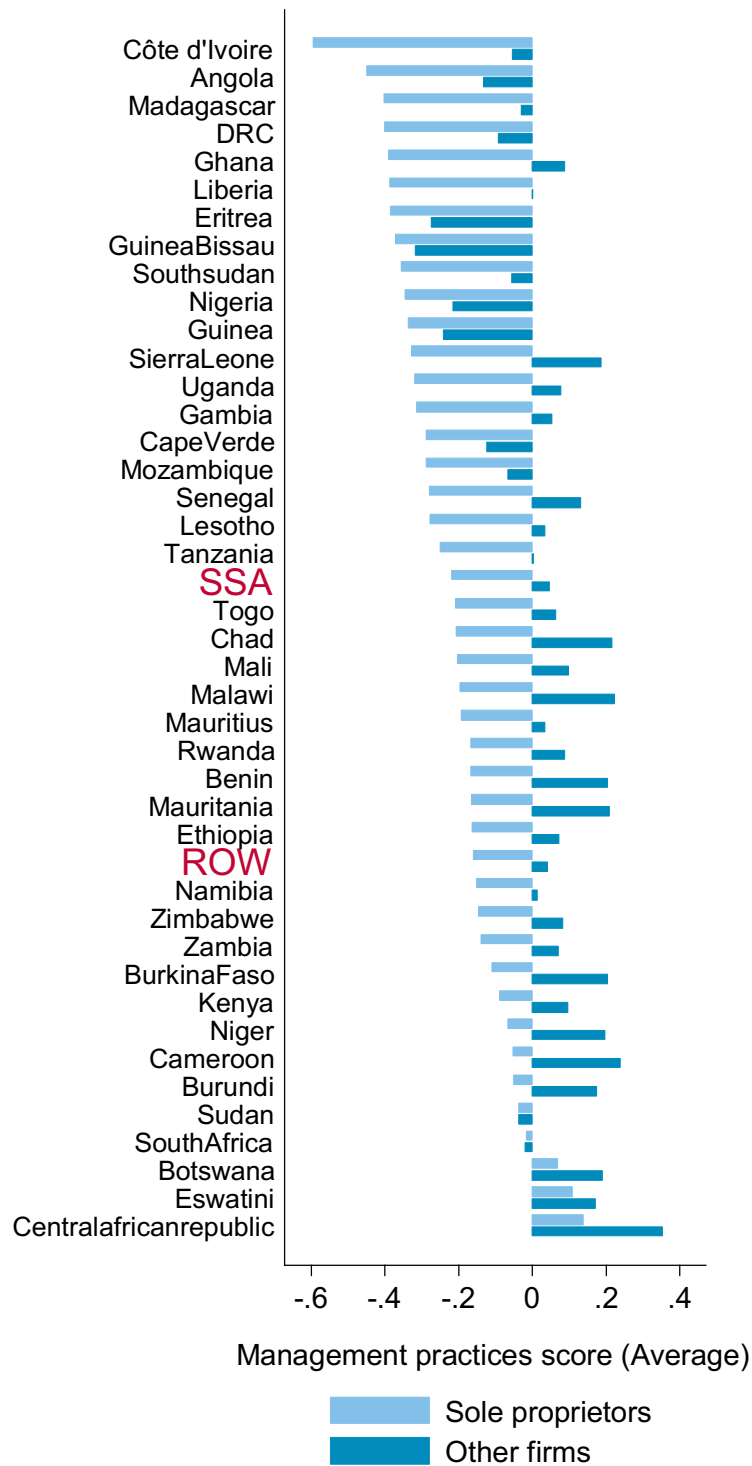
Source: Authors' estimates based on the World Bank Enterprise Survey data.
Notes: See notes in figure 1.

Figure 4. Kernel Density Plots of the Subcategories of Management Scores for Sole Proprietors



Source: Authors' estimates based on the World Bank Enterprise Survey data.
 Notes: See notes in figure 1.

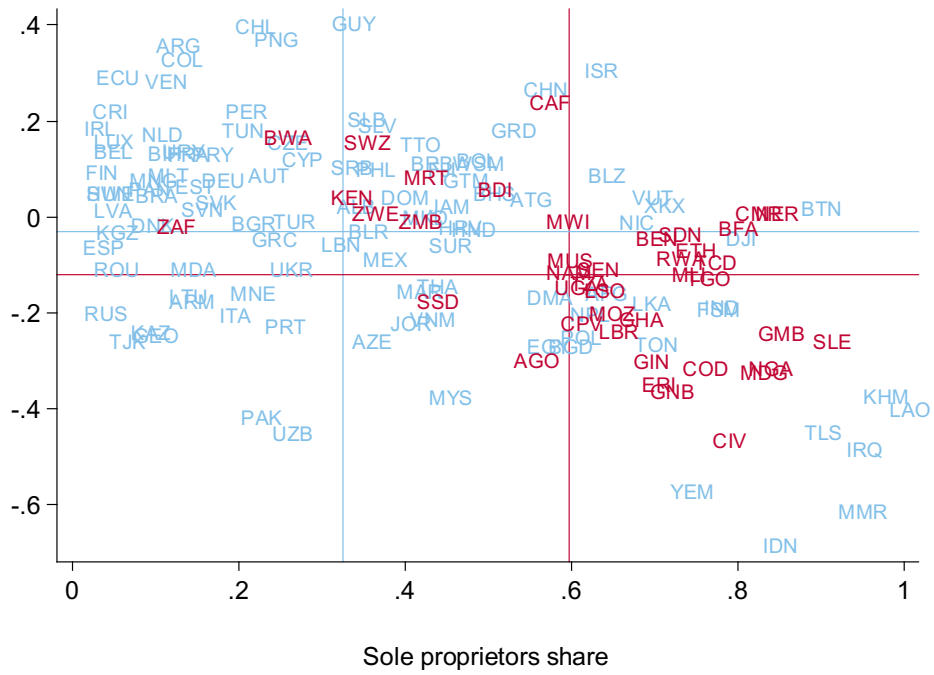
Figure 5. Management Practices, By Ownership structure, and Country



Source: Authors' estimates based on the World Bank Enterprise Survey data.

Notes: See notes in figure 1.

Figure 6. Management Practices and Sole Proprietors Across Countries



Source: Authors' estimates based on the World Bank Enterprise Survey data.

Notes: See notes in figure 1.