

International Ownership and SMEs in Middle Eastern and African Economies*

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Empirical evidence suggests that international ownership of local firms supports firm performance and growth through various channels such as financing, technology transfer, and improved access to international markets. This is particularly true for small and medium-sized enterprises (SMEs) that otherwise may lack access to a variety of vital resources. At the same time small and medium-sized enterprise (SME) formation may promote economic development. The relationship between firm performance and international ownership has been well explored for firms in developed economies but this is not the case for firms – including SMEs – in Africa and the Middle East. Largely due to lack of relevant cross-country financial data, existing literature on African and Middle-Eastern firms has presented survey-based evidence on firm performance while evidence based on detailed financial information remains lacking. The present paper aims at filling this research gap. We identify African and Middle-Eastern SMEs operating in the formal sector and examine the impact of ownership structure on firm performance. We use cross-sectional financial data covering about 25,500 companies – including about 30% SMEs – in 69 African and Middle-Eastern countries for the years 2006 to 2015. Our results indicate that international ownership has significant positive association with firm performance. For internationally-owned SMEs this appears to be true despite lower levels of equity and debt capital, implying that internationally-owned firms use international resources – other than capital – more efficiently!

JEL classification: F20, L22, M10

Keywords: MEA, ownership, firm profitability, FDI, globalization

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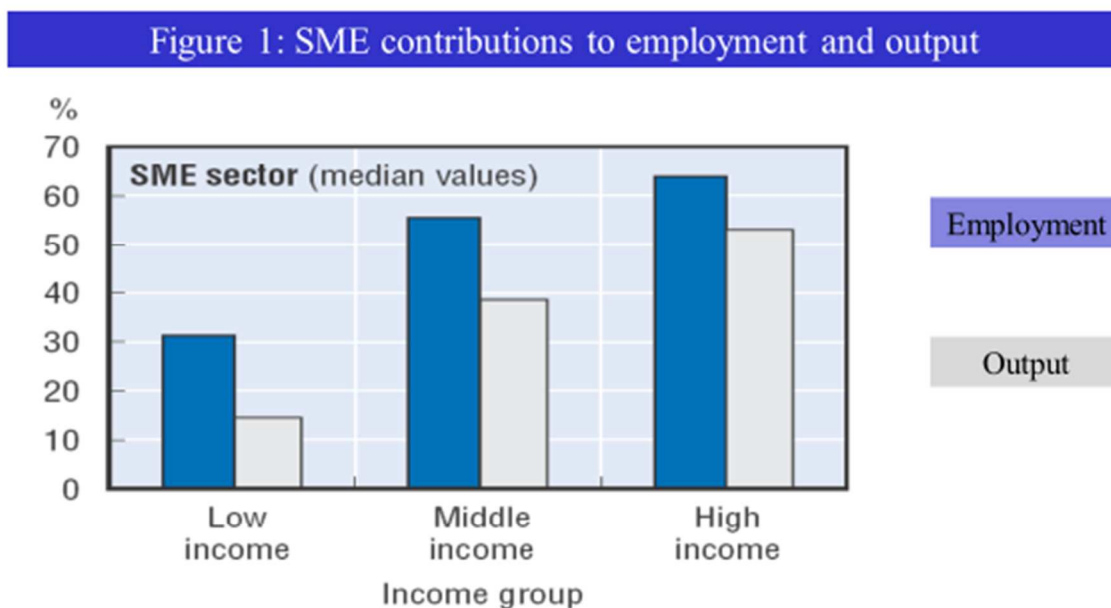
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1. Introduction

There exists ample evidence of a clear positive correlation between individual firm development – particularly medium-sized enterprise (SME) formation – and GDP per capita, human development, and the level of competitiveness.⁵ The role of firm development in economic growth is particularly crucial in Africa and the Middle East where SMEs are underrepresented and continue to face a variety of growth obstacles.⁶



Source: M. Ayyagari, T. Beck and A. Demirgüç-Kunt, "Small and Medium Enterprises across the Globe", World Bank Policy Research Working Paper 3127, Washington, DC, August 2003, pp. 27-28.

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While firm performance is affected by various factors, including the legal environment, corruption, political stability, and infrastructure, there is documented evidence that ownership characteristics have major effects on individual firm performance.⁷ Studies have found that diversified ownership, including foreign MNE owners, promotes growth and development by local firms and industries by providing equity and debt financing, by transferring technology to local firms, and by creating export opportunities due to vertical integration or due to the building of supplier relations.⁸ On the other hand, many SMEs in Africa and the Middle East face obstacles such as insufficient financing and lack of other resources.⁹

⁵ See, for example, OECD (2010, 2005) and World Bank (2011, 2010a, 2010b).

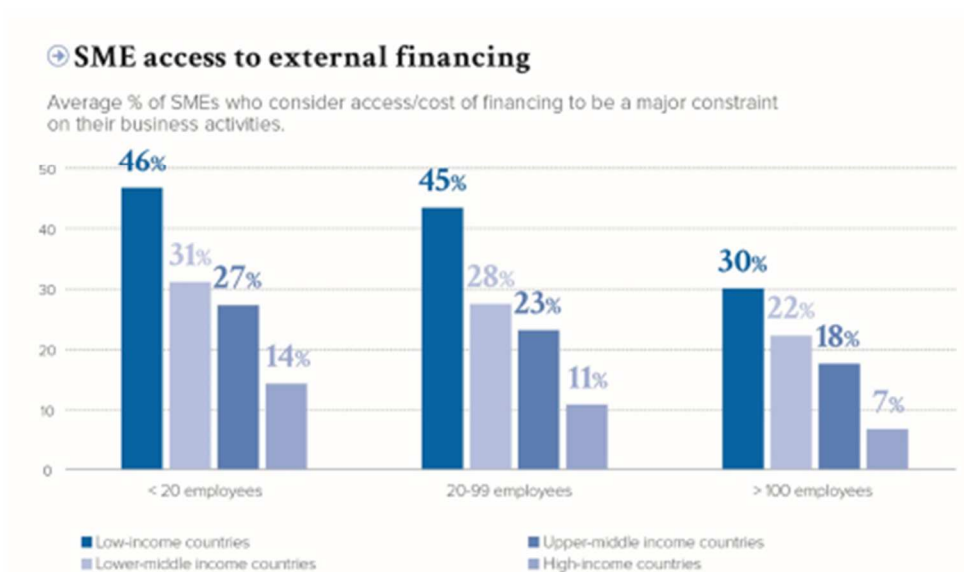
⁶ See, for example, Ahl (2006), Baliamoune-Lutz (2011), Hallward-Driemeier (2013), and Minniti (2010).

⁷ See Fauzi and Locke (2012), Syriopoulos and Tastsaronis (2012), Grygorenko and Lutz (2007).

⁸ See, for example, OECD (2010, 2005) and World Bank (2011, 2010a, 2010b).

⁹ See, for example, Dalberg (2011). Compare Baliamoune-Lutz and Lutz (2020).

Figure 2: SME access to external financing



Source: Dalberg (2011) Report on Support to SMEs in Developing Countries through Financial Intermediaries, p.12, Fig. 7.

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The effects of ownership types on firm performance as well as firms' relationships to international supply chains have been well explored for firms in developed economies and more recently for firms in emerging markets. However, this is not generally the case for firms in developing economies, especially in Africa and the Middle East.¹⁰ Studies focusing on developing economies contain either macroeconomic research on FDI, export-led development or they present survey-based evidence on firm performance - detailed financial evidence on the firm-level is lacking.¹¹

The present paper addresses this research gap by exploring the impact of international ownership on firm performance in African Middle-Eastern countries.

Specifically, we focus on a large sample of firms operating in the formal sector, and identify the ownership type of firms and examine the impact of ownership structure and international ownership on firm performance, controlling for firm size, the country where the firm exists and the industry in which it operates.

Productive capacity and resources are measured by available equity and debt capital and the ratio of debt to equity, while firm performance is represented (alternatively) by sales, profits, and returns.

¹⁰ See Brixovia (2010), Painter and Dobie (2010), Rogerson (2000), Rugraff and Hansen (2011), and Eldomiatty and Mohamed (2008).

¹¹ For an exception, see Baliamoune-Lutz and Lutz (2018) where a similar analysis is presented for African firms only but not focused on SMEs.

Ownership types are derived from the identity of the global ultimate owner. Ownership information includes, besides international ownership, several other attributes of the ultimate global firm owner such as public or private ownership, gender of the owner, number of owners, ownership concentration, and degree of independence.¹²

SMEs are identified using number of employees, revenues, and total assets as combined criteria.¹³

We use cross-sectional financial reporting data of about 25,500 African and Middle-Eastern firms for the years 2006 to 2015 including about 30 percent SMEs. The data source is Bureau van Dijk's Orbis database.¹⁴ More details on data sources and variables are presented in Tables 1 and 2.

Our results reveal a clear ownership-specific pattern and indicate the existence of a positive relationship between foreign ownership and firm performance.

Internationally-owned SMEs use less equity and debt capital and have lower levels of leverage (debt-equity ratio). At the same time international ownership appears to significantly increase firm performance measured in sales and returns on equity despite lower levels of available capital and degrees of leverage.

When the interaction of international ownership with capital availability is taken into account, we find that this interaction does not have a positive impact, implying that internationally-owned firms use international resources – other than capital – more efficiently!

The remainder of the paper is structured as follows. Section 2 contains a discussion of relevant literature and previous results. Section 3 describes the data used. Section 4 presents the general modeling and summarizes the results. Section 5 concludes. Statistical and econometric results are presented in Tables 3-6.

¹² See Table 1a in the appendix for details on ownership data and particular information about the global ultimate owner (GUO). GUO information includes the country of residence of the owner as well as other information such as government ownership or the names of individual owners (from which ownership gender can be derived).

¹³ Compare Bureau van Dijk (2011), section 15.4.1. Company size categories.

¹⁴ See Bureau van Dijk (2017) at <https://www.bvdinfo.com/en-gb/our-products/company-information/international-products/orbis>.

2. Background and literature overview

Research by the OECD (2010, 2005) and the World Bank (2011, 2010a, 2010b) documents the presence of a positive correlation between individual firm development and income per capita, the level of competitiveness, and human development. This relationship is especially relevant and in need of further strengthening in the case of Africa where individual firms, particularly small and medium-sized enterprises (SMEs), still face a variety of growth obstacles (Ahl, 2006; Baliamoune-Lutz, 2011; Dana, 2007; Hallward-Driemeier, 2013; Mather, 2005; Minniti, 2010).

A major element of successful development in Africa is the formation of a viable local industry and in particular SMEs; see for example, Rocha et al. (2011), Abor and Quartey (2010), Brixovia (2010), and Quartey (2003). Another important element is the development of export-capability into international markets of developed and emerging economies (Wohlmuth et al., 2004; Zaiem, 2012). The presence of international owners, including multinational enterprises (MNEs) and their interaction with local firms may play a major role here (Larue de Tournemine et al., 2009).

Although firm performance is affected by many factors, including the legal environment, corruption, political stability, infrastructure, human development and so forth, there is a large body of evidence supporting that ownership characteristics have major effects on individual firm performance (Fauzi and Locke, 2012; Syriopoulos and Tastsaronis, 2012; Grygorenko and Lutz, 2007).

Diversified ownership, including foreign MNE ownership, can promote growth and development by local firms and industries by providing equity and debt financing, by transferring technology to local firms, and by creating export opportunities due to vertical integration or due to the building of supplier relations (OECD, 2005; Lutz and Talavera, 2004). MNEs may transfer technology to local SMEs, create export opportunities due to vertical integration or due to the building of supplier relations (Karlsson, 2012; Kim and Zhang, 2008; Lutz et al., 2008; Hsu, 2002). On the other hand, MNEs may crowd out local economic activity and thereby hinder local development of SMEs and the birth and/or expansion of a related viable export sector (Abor and Quartey, 2010; Weidenbaum, 2000).

Numerous studies have investigated the impact of foreign ownership on firm performance in developed countries and in some emerging economies with most of the evidence pointing to differences in performance and factors affecting profitability of domestically-owned versus foreign-owned firms. However, some studies have uncovered non-linear relationships between foreign ownership and firm performance (e.g., Ferris and Park, 2005). Applying the difference-in-difference technique to a panel of Italian firm data and comparing foreign-owned firms to domestically-owned ones, Bentivogli and Mirenda (2017) examine whether there is a foreign ownership premium. Their results indicate that there is a premium for the profitability, size and financial soundness (of the foreign-owned firms), and the premium rises with time and tends to be concentrated in the service sector. Riccaboni et al. (2016) find that foreign firm-controlled Italian companies are on average more productive than Italian firms controlling foreign firms.

Weche Gelübcke (2013) undertook a comprehensive examination of foreign-controlled affiliates in Germany's service sector and finds that they perform better than German-owned affiliates but had lower profitability and generally had similar labor productivity when compared to domestically-owned affiliates with a high level of internationalization.

Applying fixed-effects estimation to panel data for the period 1995-2000 from 177 Greek manufacturing and trading firms listed on the Athens Stock Exchange, Notta and Vlachvei (2008) find that the profitability of domestically-owned firms rises with the level of growth and efficient use of borrowed capital, whereas the profitability of foreign-owned firms "increases with an efficient use of sales promotion expenditures and an efficient access to the innovation activity of its parent organization, without spending on R&D in the host country." On the other hand, focusing on whether there are differences in firm performance (profitability), Barbosa and Louri (2005) find that MNCs operating in both Greece and Portugal do not generally behave differently from domestic firms. However, they find MNCs to perform significantly better than domestic firms when firms in the upper quantiles of gross profits are compared.

Ferris and Park (2005) document the existence of a non-linear relationship between Japanese firm value and foreign ownership, with the firm value increasing until the percentage of foreign owners reaches 40% and declining thereafter. This was also confirmed in the case of some developing countries. For example, Phung and Mishra (2016) find that performance of Vietnamese firms rises with an increase in foreign ownership up to a level of 43% and then falls. Similarly, Hintošová and Kubíková (2016) based on slightly over 2,000 observations on domestically-owned, foreign- and jointly-owned firms in the Slovak Republic (in 2004-2013), find an inverted U-shaped relationship between foreign ownership and firm performance with the latter increasing with greater foreign ownership, up to the range of 61-65 %, and falling after it has reached this range.

The bulk of research using data from developing economies supports the existence of significant differences in performance - measured by various indicators of profitability or financial performance - between domestically-owned and foreign-owned firms (Gurbuz and Aybars, 2010; Foster-McGregor et al., 2015a and 2015b; Jusoh, 2015; Guner, 2015; Phung and Mishra, 2016; Vural-Yavas and Erdogan, 2016). For example, using three-year panel data from 730 Malaysian publically-listed firms, Jusoh (2015) finds that foreign ownership had positive and significant association with ROA and Tobin's Q. Guner (2015) uses a balanced panel of 275 firms in Turkey and finds a positive and significant association between foreign ownership and corporate performance. Based on the analysis of data from a sample of 205 non-financial listed companies in Turkey, covering the period 2005-2007, Gurbuz and Aybars (2010) conclude that minority foreign-owned firms performed better than domestically-owned ones in operating profitability. Interestingly, the authors find that minority-owned firms performed better than both domestic and majority foreign-owned companies in terms of returns on assets with majority foreign-owned companies performing better than domestically-owned firms. This is consistent with the findings

reported by Vural-Yavas and Erdogan (2015) who use data from 256 Turkish firms for the period 2009-2014 and find an inverted-U relationship between firm profitability and foreign ownership.

Studies focusing (totally or partially) on the impact of foreign ownership on firm performance in African countries tend, to a large extent, to measure performance in terms of productivity, employment and wage premium (te Velde and Morrissey, 2001; Rasiah and Gashino, 2005; Waldkirch and Ofosu, 2010; Kinda, 2012; Lemi and Wright, 2015; Foster-McGregor et al., 2015a) and generally use the World Bank's Enterprise Survey data or other surveys of firms in a limited number of countries. Azzam et al. (2013), Dabboussi et al. (2015), and Foster-McGregor et al. (2015b) are among the very limited number of studies that have examined the impact of foreign ownership on firm profitability. Azzam et al. (2013) use a panel of 8,185 firms in Egypt (over the period 2006-2010) and study the links between the degree of foreign ownership and financial performance. The authors find that "foreign ownership is positively associated with firm's return on assets (ROA), return on equity (ROE) and debt ratio (DR)", with financial performance rising up to a certain level and then falling. In addition, they find that the impact of foreign ownership is sector-specific. Foster-McGregor et al. (2015b) find that foreign-owned firms in 19 SSA countries performed better than domestically-owned ones in productivity, export and sales but not in profit rates. Dabboussi et al. (2015) focus on the case of Tunisia and examine the effect of foreign ownership on 13 financial institutions over the period 2000-2011. The authors find a positive and significant impact on firm profitability (return on assets and return on equity).

3. The Data

3.1 The data set

The data set used in this study consists of cross-sectional financial data of 278,024 companies in the Middle East and Africa. It contains ownership, balance sheet and profit/loss information.

The data source is Orbis global firm database from Bureau van Dijk (BvD).¹⁵ We use yearly data from 69 countries in the Middle East and Africa for 2006-2015 and we have about 25,500 African and Middle-Eastern firms (9%) with global owner name which results in an unbalanced panel with average panel depth of 5 years. See the Appendix for a summary of the data source and search results.

Available firm-level data include balance sheet data, profit and loss statement data, number of employees, BvD company size category¹⁶ (small, medium, large, very large), trade descriptions, industry and peer group information, ownership information, stock price and firm valuation data. Available ownership information includes name and nationality of global and domestic ultimate owners, index variables for female/male/family/state/international ownership, number of owners, BvD independence index (15 different ratings based on ownership concentration and type), percentage of direct and total ownership, and consolidation status of the firm.

International ownership is derived from comparing global and domestic ultimate owners, noting where these owners are from different countries. International business activity is taken from firms' description of activities in foreign markets.

Further information about the data set is given in the Appendix. While the data include firms of all sizes the majority of firms are small and medium-sized with a median firm size by employment of 70 employees. Note that the number of firms and observations is mainly constrained by the available financial data; i.e., revenues, profits, etc. Consequently, data estimations contain up to 7,846 observations covering up to 2,039 firms.

3.2 Data characteristics

Data reveal a clear ownership-specific pattern. The share of internationally-owned firms in Africa is about 21 percent on average (Table 3.1). For the firms with available financial data, the share is somewhat higher; it is about 25 percent. This share varies widely between countries but much less across industries.

Internationally-owned firms have on average higher sales and returns on equity. In contrast, they also have lower levels of equity and debt capital and a lower leverage (gearing), i.e., ratios of debt to equity. This suggests that internationally-owned firms are more productive

¹⁵ See Bureau van Dijk (2017, 2011) for detailed information on the database.

¹⁶ See Bureau van Dijk (2011), section 15.4.1. Company size categories.

but the source of that increased productivity is not (entirely) due to more access to productive resources and capital.

4. Modeling and results

4.1 Econometric modeling

Similar to a general production function approach¹⁷, we explain firm performance (a firm's sales, profits, or returns) by the sum of the resources used by that firm in the provision of its products or services, here measured by the capital used to generate the business. We utilize the variables equity and gearing (the debt-equity ratio) for measuring capital use which also gives us information about the underlying financing structure.¹⁸ In addition, we use ownership characteristics, including international ownership, as determinants of productivity in our modeling. Following the literature on performance-relevant ownership characteristics¹⁹, we also include indicators for ownership concentration and independence. Finally, we use a number of customary control variables, specifically years, industry sectors and countries.

Given the available panel data, we can use the following generalized regression model to investigate the economic hypotheses presented in this paper:

$$(1) \quad y_{i,t} = \alpha + \mathbf{B}F_i + \mathbf{\Gamma}G_{i,t} + \mathbf{\Delta}M_t + \varepsilon_{i,t} + \eta_i$$

where the dependent variable $y_{i,t}$ is a profit or sales level indicator (e.g. EBIT, sales, or profit margin) of company i in period t ; F_i is a vector of determinants specific to firm i but invariant over time (such as country or industry); $G_{i,t}$ is a vector of determinants that may vary between firms and also over time (e.g., R&D expense); M_t is a vector of period-specific determinants outside of a particular firm (e.g. global economic factors and market indicators); $\varepsilon_{i,t}$ is an idiosyncratic error term that may vary between firms and also over time and is independently distributed with $E(\varepsilon_{i,t}) = 0$; and η_i represents unobserved heterogeneity across firms, i.e., a company specific random effect that is independently distributed.

This general specification allows for either random-effects (RE) or fixed-effects (FE) modeling, where the random or fixed effects are firm-specific components. The more general approach is to allow for random firm-specific effects; the case where these effects are fixed, that is determinate constants instead of random variables, is a special sub-case. All model variants reported below were estimated with pooled OLS and RE panel models and with lagged explanatory variables. All models were also run with controls for years, countries and industries.

¹⁷ There is a large body of theoretical and empirical economic research using a general production function approach to explain firm performance; a large part of this is summarized in Hall et al. (2010), Griliches (1998) and Mairesse and Sassenou (1991).

¹⁸ Using capital as major explanatory variables also automatically controls for firm size without the need to use additional size controls such as sales or employment.

¹⁹ See, for example, Fauzi and Locke (2012), Syriopoulos and Tastsaronis (2012), Grygorenko and Lutz (2007).

The data available contain several firm-specific, time-invariant variables that can be assumed to capture a significant part of present fixed effects (e.g. country, industry indicators, functional dummies, etc.). Hence a random-effects specification seems to be a priori more appropriate. Estimations and results are summarized below.

4.2 Results

The following analyses are conducted for SMEs only, where SMEs are firms with employment under 1000, revenues under USD 140 million, and total assets under USD 280 million.²⁰

In a first step, we take a preliminary look at the effect of international ownership on revenue and profits. Following Lutz (2013), we construct 3-year averages of the main right-hand-side (RHS) variables; namely, previous capital endowments, and use their lagged values as main determinants together with an international-ownership indicator. As Table 4 shows, such a simple OLS model explains about 45 to 64 percent of variations in revenues and profits (measured in natural logs) and international ownership appears to have a statistically significant positive effect.

When we extend the analysis to account for efficiency of use of capital, a different picture emerges. In the augmented models presented in Table 5, we use interaction terms between international ownership and the lagged 3-year averages of equity endowments and the gearing (debt/equity) ratios. These models explain 48 to 65 percent of variations in revenues and profits. While international ownership per se is still correlated with revenues, profits, and returns, both interaction terms are negative and statistically significant. Apparently, increased availability of equity and/or debt capital, as well as higher leverage, do not have positive effects on firm performance in the presence on international ownership. It appears that internationally-owned firms must be deriving their advantages from sources other than capital availability. These preliminary results are confirmed by random-effects estimations presented in Table 6. The results are qualitatively identical to our earlier OLS results; while the impact of international ownership per se remains positive and statistically significant with higher revenues, profits, and returns, both interaction terms have negative and statistically significant coefficients.

²⁰ Compare Bureau van Dijk (2011), section 15.4.1. Company size categories; small, medium, and large. Note that using alternatively size categories small and medium only, with employment less than 150, revenue less than USD14 million, and total assets less than USD 28 million, will not significantly change the results obtained.

5. Concluding remarks

This paper aims to contribute to the literature on the determinants of firm performance and fill a research gap by focusing on the relationship between foreign ownership and firm performance using detailed financial data. For all SMEs – locally- or internationally-owned – increased availability of equity and/or debt capital as well as higher leverage generally have significant positive effects on firm performance, measured in sales, profits and net income.

However, internationally-owned SMEs outperform purely locally-owned firms even with lower capital endowments. In particular, when interaction effects between ownership and capital endowments are taken into account, the results suggest that internationally-owned SMEs must be deriving their advantages from sources other than capital availability. This, in turn, supports the notion that various benefits – access to technology, skilled labor, upstream/downstream global markets – accrue mostly to specific SMEs with international ownership structures.

The present paper makes at least three novel contributions to the literature. First, we use detailed financial data that have not been used in other studies focusing on developing countries, especially in Africa and the Middle East.²¹ Second, and to the best of our knowledge, this is the first study on the impact of foreign ownership on firm performance of SMEs that covers almost all African and Middle Eastern countries. Third, we use four different indicators of firm performance; revenue, profit before taxes, net income, and return on equity, while controlling for the interplay of foreign ownership with capital endowments.²²

The three papers closest in spirit to our work are Azzam et al. (2013), Dabboussi et al. (2015), and Foster-McGregor et al. (2015b). However, none of these papers use BvD detailed financial firm data. In addition, the first two papers are only for one country each (Egypt and Tunisia, respectively) and Foster-McGregor et al.'s paper focuses on only 19 SSA countries and uses only sales and profit rates as indicators of financial performance. The authors found that foreign ownership had a positive impact on sales and other productivity indicators but did not affect profit rates. We think that a possible explanation for the differences in our results compared to theirs is that we use more detailed financial data and cover significantly more firms and countries.

Finally, we must note that the present paper did not set out to investigate the mechanisms through which foreign ownership may be influencing firm performance, including through impact of foreign ownership on productivity, access to technology and managerial expertise, wage premium, and attracting skilled and talented labor (Doms and Jensen, 1998; Blomström

²¹ These are highly reliable data from a source (BvD) that continues to sell them at a rather high price. BvD was recently acquired by Moody's. However, we do acknowledge that in countries where corruption is high the reported profits and revenue levels may be underestimated for both domestic and foreign-owned firms (See Abotsi (2015).

²² However, compare Baliamoune-Lutz and Lutz (2018) where a similar analysis is presented for African firms of all sizes.

and Sjöholm (1999); te Velde and Morrissey, 2001; Harris and Robinson, 2003; Griffith et al., 2004; Yasar and Morrison Paul, 2007; Foster-McGregor et al., 2015a, 2015b). We acknowledge that this is an important topic, and we plan to explore it in future work.

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Table 1. Data source

#	Data type	Source	Downloaded / data	Date
1	African firm data (balance sheet, profit/loss)	Bureau van Dijk (BvD), Orbis database ²³	German University in Cairo, online license	3 December 2015

Product name	Orbis		
Update number	141		
Software version	129.00		
Data update	03/12/2015 (n° 14114)		
Username	RegistrationRequest-13965		
Export date	03/12/2015		
		Step result	Search result
1. All active companies and companies with unknown situation		149,475,520	149,475,520
2. World region/Country/Region in country: Africa, MENA		4,192,443	3,831,695
3. Operating revenue (Turnover): All companies with a known value, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, for at least one of the selected periods, exclusion of companies with no recent financial data and Public authorities/States/Governments		49,910,878	278,024
4. P/L before tax: All companies with a known value, 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, for at least one of the selected periods, exclusion of companies with no recent financial data and Public authorities/States/Governments		15,278,254	0
Boolean search : 1 And 2 And 3			
		TOTAL	278,024

Table 1a. Identification of the Global Ultimate Owner (GUO) of a firm²⁴

“To define an Ultimate Owner, BvDEP analyses the shareholding structure of a company having a BvDEP Independence Indicator different from A+, A or A- (which means that the company is independent and consequently, has no Ultimate Owner). It looks for the shareholder with the highest direct or total % of ownership. If this shareholder is independent, it is defined as the Ultimate Owner of the subject company [...]. If the highest shareholder is not independent, the same process is repeated to him until BvDEP finds an Ultimate Owner.”

²³ See also Bureau van Dijk (2017) at <https://www.bvdinfo.com/en-gb/our-products/company-information/international-products/orbis>.

²⁴ See Bureau van Dijk (2008), section 5.1. The Domestic Ultimate Owner (DUO) is identified accordingly.

Table 2. List of variables

Variable	Definition
BvD	Firm identifier (derived from BvD ID)
Year	Year
Country	Country
Industry	NACE 2 Core Category (1 digit)
BvDIndependIndic	BvD Independence Indicator
BvDIndependA	BvDIndependIndic = A-, A, or A+
NoShareholders	Number of Recorded Shareholders
GUOName	Global Ultimate Owner (GUO) Name
DUOName	Domestic Ultimate Owner (DUO) Name
GDUOIntl	International ownership when GUO is from a different country or is not identical to DUO.
NoEmployees	Number of Employees
Revenue	Operating revenue (000's USD)
PLbeforeTax	Profit/Loss before Tax (000's USD)
NetIncome	Net Income (000's USD)
Equity	Shareholder Funds (000's USD)
TotalAssets	Total Assets (000's USD)
Debt	Debt (000's USD): TotalAssets - Equity
ROE	Return on Equity (%), use net Income
Gearing	Gearing (%), Debt / Equity
ln*	Natural log ln(*) of variable <*>
a3*	3-period average a3(*) of variable <*>
GDUOIntl3Gear	Interaction term: Intl*a3(Gearing)
GDUOIntl3Equity	Interaction term: Intl*a3(ln(Equity))

Table 3. Summary statistics (selected variables)

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	25927	2011	2	2006	2015
Country	25927	34	15	1	69
Industry	23288	4	2	0	9
BvDIndepA	25927	0	0	0	1
NoShareholders	25927	3	5	1	122
GDUOIntl	25927	0.269	0.443	0	1
NoEmployees*	17302	152	218	1	998
Revenue	25927	76581	1025703	0	79700000
PLbeforTax	17218	7647	102396	-7871623	9038781
NetIncome	7245	7434	108148	-7976315	1916267
Equity	7333	131423	1036841	-3195687	42900000
TotalAssets	7334	527812	4453235	0	280000000
ROE	2038	17	61	-810	967
Gearing	6640	158773	5367758	0	996

Notes: Source Bureau van Dijk (2015) and own calculations.

See Table 1 for variable definitions.

* Firm size distribution by number of employees (NoEmployees) has a median of 48 employees and the interquartile range is 10 – 200 employees.

Table 4. Preliminary results: Revenues and profits (Pooled OLS estimations)

Model	(4.1.1) OLS	(4.1.2) OLS	(4.1.3) OLS
Dep. Variable	lnRevenue	lnPLbeforTax	lnNetIncome
l.a3lnEquity	0.526***	0.570***	0.618***
l.a3Gearing	0.000000031***	0.000000025***	0.00000129***
GDUOIntl	0.343***	0.268***	0.170***
Observations	7846	5974	2451
R-sq.	0.4721	0.5551	0.6371
R-sq. adj.	0.4667	0.5491	0.6260
Prob > F	0.0000	0.0000	0.0000

Notes.

- (i) All models estimated with pooled OLS.
- (ii) All models include a constant. All models include country, industry, and year dummies.
- (iii) *** denotes significant at the 1%, ** at the 5%, * at the 10% level.

Table 5. Results summary: Revenues, profits, and returns (Pooled OLS estimations)

Model	(5.1) OLS	(5.2) OLS	(5.3) OLS	(5.4) OLS
Dep. Variable	lnRevenue	lnPLbeforTax	lnNetIncome	ROE
1.a3lnEquity	0.597***	0.614***	0.662***	-2.199*
1.a3Gearing	0.000000045**	0.000000020***	0.0000065***	0.00000921
GDUOIntl	1.615***	0.771***	0.998***	192.1***
1.GDUOIntl3Equity	-0.156*	-0.060***	-0.090***	-15.95***
1.GDUOIntl3Gear	-0.000000022***	0.0000015***	0.0000053***	0.00089***
BvDIndepA	-0.334***	-0.073	-0.045	-6.718***
NoShareholders	0.015***	0.036***	0.034***	0.496***
NoShareholders^2	-0.00015***	-0.00034***	-0.00033***	-0.0037***
Observations	7846	5974	2451	1421
R-sq.	0.4818	0.5767	0.6464	0.2295
R-sq. adj.	0.4762	0.5706	0.6348	0.1955
Prob > F	0.0000	0.0000	0.0000	0.0000

Notes.

(i) All models estimated with pooled OLS.

(ii) All models include a constant. All models include country, industry, and year dummies.

(iii) *** denotes significant at the 1%, ** at the 5%, * at the 10% level.

Table 6. Results summary: Revenues, profits, and returns (RE estimations)

Model	(6.1) RE	(6.2) RE	(6.3) RE	(6.4) RE
Dep. Variable	lnRevenue	lnPLbeforTax	lnNetIncome	ROE
l.a3lnEquity	0.457***	0.549***	0.651***	-2.237
l.a3Gearing	0.000000034***	0.000000016**	0.0000065***	0.000034
GDUOIntl	1.259***	1.001***	1.410***	208.1***
l.GDUOIntl3Equity	-0.112***	-0.083***	-0.138***	-17.29***
l.GDUOIntl3Gear	-0.000000018*	-0.00000047***	-0.0000062***	0.00093***
BvDIndepA	-0.290***	-0.055	-0.057	-6.685
NoShareholders	0.037***	0.046***	0.034***	0.382
NoShareholders^2	-0.00030**	-0.00038***	-0.00031***	-0.0035
Observations	7846	5974	2451	1421
Groups (Firms)	2039	1807	1230	413
R-sq. within	0.0176	0.0107	0.0015	0.0037
R-sq. between	0.5153	0.6287	0.6568	0.4921
R-sq. overall	0.4594	0.5639	0.6317	0.2273
Prob > chi2	0.0000	0.0000	0.0000	0.0000

Notes.

(i) All models estimated with random effects.

(ii) All models include a constant. All models include country, industry, and year dummies.

(iii) *** denotes significant at the 1%, ** at the 5%, * at the 10% level.