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Diaspora investments and firm export performance in selected sub-Saharan African countries

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Diaspora investments and firm export performance in selected sub-Saharan African countries

Amadou Boly
Development Policy, Statistics and Research Branch
UNIDO

Nicola Coniglio
Department of Economics and Mathematics
University of Bari "Aldo Moro"

Francesco Prota
Department of Economics and Mathematics
University of Bari "Aldo Moro"

Adnan Seric
Business, Investment and Technology Services Branch
UNIDO

UNIDO

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
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Abstract

Skilled migrants can create enormous benefits for their countries-of-origin as shown by the relevant contributions that the large, prosperous and well organized Chinese and Indian diasporas have made to their home countries. An increasingly popular way diasporans can contribute to development is by investing their capital in existing businesses and setting up new ventures in their countries-of-origin. Given the peculiarity of diaspora investments and their role as potential channel for industrial development, this paper analyses whether these growingly important investors differ from domestic firms and foreign investors in terms of export behaviour. Our results indicate that the presence of diaspora investors and entrepreneurs in the country-of-origin's economy may contribute to the internationalization of domestic economy and therefore play a role in helping their homelands develop.

1. Introduction

Globalization has not only given rise to an accelerated flow of goods and services around the world but has also fostered an increase in the movement of people across borders. Some scholars argue that migration results in a 'brain drain' whereby educated and skilled members of a country leave in search of higher wages and better living conditions. Others argue that this brain drain is offset because the prospect of leaving provides an incentive for those left behind to invest in their own human capital (Stark et al., 1998). Besides these possible effects, there is growing evidence on the beneficial impact of migration on origin countries in the South. The fact that skilled migrants can create enormous benefits for their countries of origin has come to attention in recent years through the conspicuous contributions that the large, highly skilled, prosperous and well organized Chinese and Indian diasporas have made to their home countries. In particular, India is frequently cited in the literature to exemplify the potential for a diaspora to foster technology and knowledge diffusion (Kerr, 2008; Agrawal et al., 2008) or the contribution of return migration to the home economy (Saxenian, 2006; Agrawal et al., 2008).

There are different channels through which diaspora can have an impact on economic development: remittances to homeland; bilateral trade and investment flows between host and origin countries; knowledge and innovation networks. Investments by diaspora members in existing businesses and/or in new business ventures in their countries-of-origin might be particularly crucial in capital scarce developing countries, such as Sub-Saharan Africa, where relatively weak institutions, social and political risks, inadequate infrastructures or other less-attractive structural characteristics may discourage foreign investors (Riddle, 2008).

In the light of these considerations, this paper analyses in which respect these growingly important investors differ from domestic firms and foreign investors. In particular, we investigate whether a diaspora firm differs from domestic and foreign firms in terms of export performance, and we try to explain these difference by looking at those dimensions which the theory suggests are relevant for firm export performance.

We use original firm-level data collected through the UNIDO Africa Investor Survey 2010 (AIS 2010, henceforth) across 19 Sub-Saharan Africa countries.[1] The survey questionnaire was designed to collect information from business owners/senior managers on a wide array of financial data, investment performance indicators, investor characteristics and perceptions (the

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[1] Burkina Faso, Burundi, Cameroon, Cape Verde, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mali, Mozambique, Niger, Nigeria, Rwanda, Senegal, Tanzania, Uganda, Zambia.

database comprises more than 700 variables). In total, it includes data on about 6,500 companies, of which 64 percent were domestic and 36 percent partly or wholly foreign-owned.

The original contribution of this paper to the literature is twofold. First, we look at the impact of diaspora investors in Sub-Saharan Africa. While there exists numerous empirical studies on the impact of diaspora on economic development in several Asian countries such as India, Taiwan and China, there is a glaring void in the case of Sub-Saharan Africa. Second, contrary to the prior literature studying diaspora investments, we employ a firm level approach, using both parametric and non-parametric methods, in line with the heterogeneous firms literature (Melitz, 2003; Melitz and Ottaviano, 2008). Using firm level data allows us to determine whether diaspora firms have a better export performance compared to domestic ones and to shed some light on the source of their competitive advantage.

We find that diaspora firms not only have higher probability of exporting but also a higher share of exports in total sales than the domestic ones. The better export performance may be explained by two factors. First, diaspora firms have on average a higher labour productivity compared to domestic firms. Second, diaspora entrepreneurs have an information advantage as confirmed by the fact that they are more familiar with international and regional trade agreements than both domestic firms and, interestingly, foreign multinational enterprises.

Diaspora investors and entrepreneurs may, therefore, significantly contribute to the internationalization of their home economy and, through this channel, play a crucial role in boosting the economic development of migrant-sending countries.

The remainder of this paper is organized as follows. Section 2 provides a brief overview of the literature on the role of the diaspora in economic development. In Section 3, we describe the size and the relevance of African diaspora. Section 4 describes the data and the econometric methodology, while Section 5 discusses the main results. Finally, Section 6 contains our concluding remarks.

2. The role of the diaspora in development: a literature review

Diasporas are ''ethnic minority groups of migrant origins residing and acting in host countries but maintaining strong sentimental and material links with their countries of origin - their homelands'' (Sheffer, 1986). Diaspora members identify themselves as members of a dispersed identity group with continuing common ties to the homeland.[2]

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[2] As shown in a recent paper, diasporas abroad have a strong impact on the number, skill composition and concentration of international migrants (Beine et al., 2011).

There are several ways in which diasporas can stimulate economic development in their homelands (Rauch, 2003; Wei and Balasubramanyam, 2006).

First, diasporas contribute to financial flows to their home countries through private money transfers (remittances) to family members (Ratha et al., 2011).[3] Globally, in 2010, remittance flows are estimated to have exceeded $ 440 billion; from that amount, developing countries received $ 325 billion (World Bank, 2011). The true size of remittances including unrecorded flows through formal and informal channels is likely to be significantly larger. In several developing countries, diasporas contribute significant portions of their homeland's GDPs.[4]

Second, diasporas can have a substantial impact on trade flows. In fact, international transactions are plagued with informal trade barriers – such as information costs and cultural barriers - in addition to formal trade barriers like transportation costs and tariffs. The presence of people with the same ethnic or national background on both sides of a border may alleviate these problems as confirmed by a growing empirical literature (Gould, 1994; Head and Ries, 1998; Rauch and Trindade, 2002; Combes et al., 2005). Immigrants can also stimulate imports to their new country of residence by purchasing goods from their homeland (supporting international trade in ethnic products).

Third, diasporas may facilitate the domestic firms access to technologies and skills through professional associations, temporary assignments of skilled expatriates in origin countries, distance teaching, and the return of emigrants with enhanced skills. These contributions are particularly relevant in countries suffering from brain drain in specific technical sectors. The diaspora can contribute to knowledge creation and diffusion by acting as a conduit for knowledge and information flows back to the sending country (Agrawal et al., 2006; Kerr, 2008).[5]

Fourth, a recent literature has established a causal relationship between the size of diasporas and bilateral flows of foreign direct investment to the migrants' homeland (Gao, 2003; Kugler and Rapoport, 2007; Docquier and Lodigiani, 2010; Leblang, 2010; Javorcik et al., 2011). Migrant networks facilitate cross-border information flows increasing the degree of familiarity between home and host countries. Just as migrants may have a taste for commodities produced in their

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[3] Diasporas also organize philanthropic activities targeted to the homeland, either through diaspora organizations, faith communities ∕ organizations, or less informal, more individual ways.

[4] In 2009, recorded remittances were nearly three times the amount of official aid and almost as large as foreign direct investment flows to developing countries (World Bank, 2011).

[5] A possible outcome of this kind of network is to increase international research collaboration, thus bringing benefits to sending countries. There is evidence of linkages between highly skilled migrants and their countries of origins as shown by internationally co-authored articles (Regets, 2007).

home country, they may also have a *home bias* for their investments' decisions.[6] Diaspora networks can also help decrease asymmetries of information through two channels: (*i*) migrant communities in destination countries can provide investors with information regarding the tastes of consumers in their country of origin and signals about the quality of labour, the work ethic, and the business culture that exists in a particular destination (Kugler and Rapoport, 2007); (*ii*) diaspora networks can have an indirect effect on investment because they may have knowledge about investment opportunities, information about regulations and procedures, or familiarity with language and customs that can decrease the transaction costs associated with cross-border investment (Leblang, 2010; Javorcik et al., 2011).

Looking at the supply of investment in more detail, an increasingly popular way diasporas can stimulate economic development is by investing their capital in existing businesses and/or setting up new ventures in their countries-of-origin. In some cases, these investments are made by 'diaspora foreign direct investors' at arm's-length (i.e. without the return of the diaspora member in the home country), while, in others, by 'diaspora entrepreneurship' or return migrants (Riddle, 2008). These investments can be particularly crucial in capital scarce developing countries where relatively weak institutions, social and political risks, inadequate infrastructures or other less-attractive structural characteristic may discourage foreign investors (Riddle et al., 2008).[7] Diasporans, on the contrary, may be more likely to invest in economies perceived as risky, since they have better knowledge of the home economy and a more dense network of relationships compared to other investors. In addition they can be motivated also by altruistic feelings of homeland duty and obligation and by a perceived ethnic advantage. Existing research concerning this specific topic is scant, and the majority of current work is theoretical (Gillespie et al., 1999; Nielsen and Riddle, 2007; Nielsen and Riddle, 2010) or based on anecdotal evidence. Rigorous empirical evaluation of diaspora firms development potential is needed.

This paper contributes to the understanding of the mechanism by which diaspora firms can contribute to their homelands development looking at a specific - and particularly relevant - dimension: export performance.

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[6] For example, they may enjoy higher levels of trust with co-ethnics (Rauch, 2003; Docquier and Lodigiani, 2010).
[7] In addition, the economic benefits of this type of investment go beyond the immediate influx of capital. As shown in a recent paper, for example, diaspora foreign direct investors are more likely to establish connections with local suppliers (backward linkages) than typical, non-diaspora foreign investor (Amendolagine et al., 2012).

3. The African diaspora

The African continent is a 'latecomer' in the global geography of migration flows but the number of Africans people residing abroad is rapidly growing. Conservative estimates put the African diaspora at 30.6 million in 2010 (World Bank, 2011)[8].

About 50 percent of the African diaspora is located within the African continent; in particular, intraregional emigration accounts for almost 65 percent of total emigrants in Sub-Saharan Africa (Table 1).

Table 1 - Migration within and outside Africa, 2010 (percent of all emigrants)

Origin subregion	Destination subregion					
	Central Africa	East Africa	North Africa	Southern Africa	West Africa	Out of Africa
All Africa	3	13	2	11	21	50
Central Africa	23	26	0	9	3	39
East Africa	1	52	3	3	0	41
North Africa	0	0	6	0	0	93
Southern Africa	0	7	0	66	0	28
West Africa	5	0	0	0	71	24
Other regions	0	0	0	0	0	100

Note: includes only identifi ed sources and destinations. Rows may not sum to 100 percent because of rounding errors.

Source: World Bank 2011 (table 1.3 in Ratha *et al*. 2011)

The recent increase in outmigration has generated a substantial surge in remittance inflows: between 1990 and 2010 remittances have quadrupled reaching nearly $ 40 billion (2.6 percent of Africa's GDP) in 2010, more than half of this financial windfall is flowing to Sub-Saharan Africa (Graph 1). Financial flows generated by the diaspora are the continent's largest source of net foreign inflows after foreign direct investment (FDI). The true size of remittance is likely significantly underestimated: only about half of the countries in Sub-Saharan Africa collect remittance data with any regularity, and some major receivers of remittances report no data at all (Ratha et al., 2011).

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[8] The estimated figures is likely to significantly under-estimate the real stock of migrants given the heterogeneity of the definition of migrant across countries and the unobserved population of irregular migrants. Besides, strictly speaking, the concept of diaspora is broader than that of stock of migrants since it includes second- and even third-generation 'migrants' which still have some form of links to their home countries.

Graph 1 - Inward remittance flows in Sub-Saharan Africa (US$ billions)
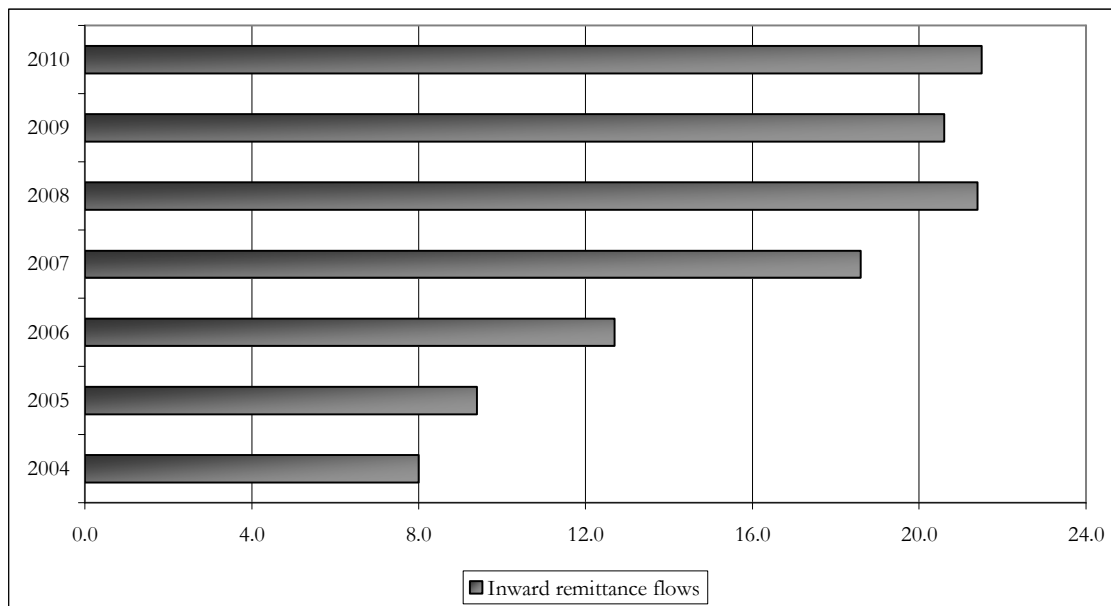
Much less is known about the flow of foreign direct investment by the diaspora into African countries. Chacko and Gebre (2012) analyse diaspora investment in Ethiopia for the period 1994-2008. They find that the share of diaspora investment relative to domestic private investment and foreign direct investment is 3 percent for the country as a whole, while in Addis Ababa, where most diaspora investment tends to be concentrated, it has accounted for about 10 percent of total investments. Given the extent of African diaspora savings, diaspora investment can be expected to be large and growing. The estimated diaspora savings for Sub-Saharan Africa is $ 30.4 billion (3.2 percent of the gross domestic product of this area), and for the entire African continent is nearly $ 53 billion (Ratha and Mohapatra, 2011).

Considering its relevance and its potential role in fostering economic development there is a growing attention by African government and international organization in mobilizing diaspora resources. A few African countries have established government agencies to encourage diasporas to invest, assist local communities, and provide policy advice and/or have improved the engagement of their embassies abroad with the diaspora community. In particular, investment promotion agencies in Ethiopia, Ghana, Nigeria and Uganda have started to target diaspora potential investors providing them with information and linkage opportunities. For example, Ghana's investment promotion agency, the Ghanaian Investment Promotion Center, has a separate division within its organisation which has not only assumed responsibility for diaspora investment promotion activities for the Ghanaian government but it also serves as the main point of contact between Ghana and its expatriates abroad (Riddle et al., 2008).

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Multilateral institutions and donors are also growingly active in stimulating diaspora pro-development role. For example, the World Bank launched in September 2007 the African Diaspora Program which seeks to enhance the human and financial capital contributions of African diasporas to the economic development of their home countries in partnership with the African Union, partner countries, partner donors, and African diaspora professional networks and hometown associations.

4. Data description and methodology

We use original firm-level data collected through the UNIDO Africa Investor Survey 2010 across 19 different countries. The database contains a rich set of information on a large sample of domestic, foreign and diaspora firms (investors characteristics, linkages with global and local markets, interactions with IPAs of the host country, organizational structure, main factors driving location decision, etc.).[9]

We follow two different empirical approaches in order to investigate differences in export performance of diaspora firms compared to domestic and foreign ones.[10]

First, we employ a non-parametric approach that consists of comparing the distributions of firm export intensity corresponding to diaspora and domestic firms and to diaspora and foreign firms. This econometric strategy is defined as stochastic dominance: it aims at assessing whether a relation of stochastic dominance holds and relies on the characterization of the cumulative distribution functions. This approach allows us to robustly compare export performance differences across firm types at all moments of their export intensity distributions, rather than at a single moment (typically the mean).

We perform statistical tests of first order stochastic dominance through Kolmogorov-Smirnov (K-S, henceforth) tests. In particular, following Delgado et al., (2002) we perform tests of stochastic dominance of a given distribution $F(z)$ (in our case, the export intensity of diaspora firms) with respect to another distribution $G(z)$ (in our case, the export intensity of, respectively, domestic firms and foreign firms) by testing two hypotheses:

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[9] The collection of the dataset followed a rigorous survey methodology in terms of stratified sampling (on three dimensions: sector, size and ownership) and interview techniques (face-to-face interviews with top-level managers of foreign- and domestically-owned firms). The sample was constructed in order to be representative of public and private for profit firms with 10 or more employees. An oversampling of relatively large firms (> 100 employees) was adopted.

[10] According to the definition employed in the UNIDO survey, we define diaspora investment "as an investment made by nationals or former nationals of the particular survey country who reside or did reside outside of the survey country" (UNIDO, 2012).

$$F(z) - G(z) = 0 \text{ uniformly in } z \in \mathfrak{R} \text{ with strictly inequality for some } z \qquad (1)$$

$$F(z) - G(z) \leq 0 \text{ uniformly in } z \in \mathfrak{R} \text{ with strictly inequality for some } z \qquad (2)$$

The first hypothesis is tested through the so-called two-sided K-S test whereas the second hypothesis is tested through the so-called one-sided K-S test. We can conclude that $F(z)$, the export intensity distribution of diaspora firms, stochastically dominates $G(z)$, the export intensity distribution of domestic (foreign) firms, if we reject the null hypothesis in the first test and fail to reject the null in the second test.

Second, in order to control for some firm-level characteristics that might affect the differences in export performance, we employ a parametric approach. In particular we estimate the following regressions:

$$y_i = \alpha + \beta \, diaspora \, firm_i + \gamma \, foreign \, firm_i + \delta \, X_i + \eta \, country_i + \lambda \, I_i + \varepsilon_i \qquad (3)$$

where y_i denotes the chosen firm export performance indicators for firm i (more specifically, exporter status, a binary variable taking the value of 1 if the firm exports and 0 otherwise, and export intensity, measured by the export to sales ratio); *diaspora firm$_i$* is a dummy equal to one for diaspora enterprises and zero otherwise, *foreign firm$_i$* is a dummy variable equal to one for foreign multinational enterprises and zero otherwise; X_i is a vector of the control variables which seek to capture factors affecting firm performance (employment; skills and gender composition; labour productivity; ownership structure; domestic inputs; product diversification); *country$_i$* and I_i are dummy variables for industries and countries.[11]

Notice that some of the explanatory variables (*employment* and *labour productivity*) are lagged one period to avoid simultaneity problem.

Operationally, we quantify the effect of the aforementioned factors on the probability of exporting (exporter status) by estimating a probit model and on the export intensity (as measured by the export/sales ratio) by estimating a tobit model.[12]

In addition, in order to analyse the decision to export or not to a particular market (and to test whether the 'diaspora advantage' is larger for South-North compared to South-South trade flows), we extend our original probit model by specifying one equation for each market (*South*

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[11] The Appendix A contains the description of the variables used in the estimates and some descriptive statistics.
[12] Our main aim is to test the statistical significance and the sign of the coefficient of the *diaspora firm* dummy.

and *North*) and assuming that the disturbances are correlated. To this purpose, we estimate a seemingly unrelated bivariate probit.[13]

5. Empirical results

The results of the non-parametric estimation indicate a significant 'between-group' heterogeneity for the first two comparison groups, with domestic firms significantly less export intense than diaspora ones. Indeed, inspection of upper part of Table 2 reveals that we strongly reject the null hypothesis of equality of the cumulative distribution. As we do not reject the null in the one-sided test, we can conclude that cumulative distribution of diaspora firms stochastically dominates that of domestic firms. This conclusion does not hold for the other couple: diaspora firms and foreign firms.

Table 2 - Kolmogorov-Smirnov tests for first order stochastic dominance - export intensity

	Diaspora firms vs Domestic firms	
Year	Two sided	One sided
2009	0.1541	-0.0006
	(0.000)	(1.000)
2008	0.1398	0.0000
	(0.000)	(1.000)
	Diaspora firms vs Foreign firms	
Year	Two sided	One sided
2009	0.0657	-0.0657
	(0.236)	(0.118)
2008	0.0782	-0.0782
	(0.135)	(0.068)

Note: Two sided is a test of the null that the two cumulative distribution functions are equal against the alternative that they differ. One sided is a test of the null that the cumulative distribution function of the second group lies below (or is equal to) the cumulative distribution function of the first group against the alternative that it lies above.

Table 3 reports probit estimates of equation (3) when the dependent variable is the export status.[14] The results suggest that diaspora firms are more likely to be exporters than the domestic ones even controlling for other relevant firms characteristics.[15] In particular, being a diaspora firm increases the probability of exporting by almost 12 percent (column 4).

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[13] We use this econometric technique since probit equations in the model are not independent and hence cannot be estimated separately.
[14] Industry and Country fixed effects are included but not reported.
[15] This result is stable across different specifications.

In Table 4 we report the results of the tobit estimates on the links between the share of exports in total sales and firm characteristics. We find that the coefficient of the variable *diaspora firm* is positive and statistically significant across different specifications. This finding implies that diaspora firm not only have higher probability of exporting but also a higher share of exports in total sales.

Looking at the other control variables, our results are in line with the existing empirical literature. The estimated coefficients on employment and labour productivity are positive and significantly different from zero suggesting that large and more productive firms are more likely to export and to have a larger share of exports in total sales (Roberts and Tybout, 1997; Bernard and Jensen, 1999, 2004; Arnold and Hussinger, 2005). Sourcing patterns are also relevant to understand the export behaviour of Sub-Saharan African firms: firms that rely more heavily on domestic suppliers are less likely to enter and sell products in international markets (Hasan and Raturi, 2003; Ottaviano and Martincus, 2009). Indeed, the richness of input variety in the foreign markets and the plausible better quality and incorporated technology of imported inputs may increase the efficiency of the production process and, therefore, the probability of exporting as well as its intensity. In addition, having contact with foreign suppliers may reduce information costs associated with entry into new markets. In order to control for the influence of financial constraints on export activities, we use the ownership structure of a firm as a measure of the possibility of financing business operations by external sources. The coefficient of the dummy variable *family business* tells us that family firms have a lower probability of exporting; it is more difficult for these firms to finance the large and partly sunk costs for entering into foreign markets compared to limited liability companies.

We find that product diversification has a positive effect on export propensity but we find evidence of a negative effect on the export intensity. It is plausible that diversified firms are likely to have more products that will be profitable in foreign markets and, therefore, this helps the initial decision to start exporting, but the export proportion of sales is higher for more specialized firms (which in the African continent are often specialized in raw materials and natural resources).

Our model also incorporates a control variable on the female share of employment of companies (Ozler, 2000). Interestingly, we find that a higher proportion of female workers is positively associated both to the extensive and intensive margins of trade. This result seems to confirm the evidence that openness to the world economy has led to the feminization of the labour force in many developing countries, although the exact mechanisms behind this process are still

controversial.[16] One argument stresses the importance of female labour force characteristics such as reliability, stability, and flexibility from the viewpoint of employers, while other authors suggest that women workers have been substituted for men workers by employers seeking more docile and cheap labour as global competition increases (Standing, 1989; Pearson, 1998).

Table 3 - Export decision: Probit estimates

	(1)	(2)	(3)	
	Coefficient	*Coefficient*	*Coefficient*	*Marginal effects* [*]
Diaspora firm	0.3047**	0.2888**	0.3239***	0.1173***
	(0.1196)	(0.1208)	(0.1221)	(0.0466)
MNE	0.5209***	0.5081***	0.5483***	0.1916***
	(0.0587)	(0.0595)	(0.0635)	(0.0226)
Employment	0.0004***	0.0004***	0.0004***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Labor productivity (ln)	0.1217***	0.1460***	0.1424***	0.0481***
	(0.0182)	(0.0189)	(0.0190)	(0.0064)
Domestic inputs	-0.1703***	-0.1749***	-0.1755***	-0.0580***
	(0.0613)	(0.0622)	(0.0624)	(0.0201)
Multi_product	0.0760	0.0910	0.0931	0.0311
	(0.0579)	(0.0588)	(0.0588)	(0.0195)
Blue-collar	0.5211***	0.4966***	0.5103***	0.1722***
	(0.1372)	(0.1388)	(0.1393)	(0.0470)
Female employment		1.0253***	1.0306***	0.3479***
		(0.1333)	(0.1335)	(0.0450)
Family business			-0.1115*	-0.0378*
			(0.0605)	(0.0206)
Industry Fixed Effects	Yes	Yes	Yes	
Country Fixed Effects	Yes	Yes	Yes	
Pseudo R^2	0.1987	0.2134	0.2143	
Observations	2916	2893	2893	

Standard errors are reported below estimated coefficient between parentheses.

*** significant at 1% level; ** significant at 5% level; * significant at 10% level.

[*] Marginal effects for dummy variables are calculated as discrete change from 0 to 1.

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[16] The relationship between export-oriented industrialization and feminization is particularly strong for economies specializing in commodities that require low-skill content and labour-intensive methods of production.

Table 4 - Export intensity: Tobit estimates

	(1)	(2)	(3)
Diaspora firm	0.0532**	0.0460**	0.0446*
	(0.0237)	(0.0232)	(0.0234)
MNE	0.1004***	0.0922***	0.0905***
	(0.0116)	(0.0114)	(0.0120)
Employment	0.0001***	0.0001***	0.0001***
	(0.0000)	(0.0000)	(0.0000)
Labor productivity (ln)	0.0007	0.0061*	0.0063*
	(0.0034)	(0.0034)	(0.0034)
Domestic inputs	-0.0224*	-0.0205*	-0.0205*
	(0.0116)	(0.0114)	(0.0114)
Multi_product	-0.0458***	-0.0438***	-0.0438***
	(0.0110)	(0.0108)	(0.0108)
Blue-collar	0.1436***	0.1419***	0.1413***
	(0.0259)	(0.0253)	(0.0254)
Female employment		0.2984***	0.2983***
		(0.0248)	(0.0248)
Family business			0.0047
			(0.0110)
Industry Fixed Effects	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes
Pseudo R^2	0.4137	0.4894	0.4895
Observations	2911	2888	2888

Standard errors are reported below estimated coefficient between parentheses.
*** significant at 1% level; ** significant at 5% level; * significant at 10% level.

In order to test whether the diaspora firms export performance depends on the export markets, we now turn to export behaviour across two main destination markets: South, which comprises African countries, China, India and other Asian countries, and North, which comprises European Union member states, United States and other OECD destinations. Table 5 presents seemingly unrelated bivariate probit regressions. The variable *diaspora firm* is positive in both the equations but statistically significant only for exports toward other South destination. This result seems to indicate that diaspora members are better able to exploit the overall knowledge they have of African continent or others South destinations. In this respect it is interesting to note that about 40 percent of the diaspora investors is resident in other developing countries (25 percent within Africa).

Table 5 - Export decision by destination market:

seemingly unrelated bivariate probit

	South	*North*
Diaspora firm	0.2785**	0.1822
	(0.1263)	(0.1418)
MNE	0.3949***	0.3839***
	(0.0645)	(0.0735)
Employment	0.0002***	0.0006***
	(0.0001)	(0.0001)
Labor productivity (ln)	0.1614***	0.0467*
	(0.0229)	(0.0252)
Domestic inputs	-0.1960***	0.0973
	(0.0639)	(0.0732)
Multi_product	0.1623***	0.0001
	(0.0600)	(0.0668)
Blue-collar	0.3803***	0.5541***
	(0.1411)	(0.1803)
Female employment	0.3355**	1.2684***
	(0.1403)	(0.1387)
Family business	-0.1580**	-0.1088
	(0.0612)	(0.0719)
Industry Fixed Effects	Yes	Yes
Country Fixed Effects	Yes	Yes
Rho (robust standard error)	0.4867 (0.0366)	
Wald test Rho=0 (chi2(1))	122.768***	
Observations	3006	

Robust standard errors are reported below estimated coefficient between parentheses.
*** significant at 1% level; ** significant at 5% level; * significant at 10% level.

Several studies examining foreign market entry decisions have shown that there are significant productivity differences between exporters and non-exporters (Bernard and Jensen, 1995; Roberts and Tybout, 1997; Bernard et al., 2003). In this regard it is interesting to note that we find that diaspora firms are more productive than domestic ones, another element which

supports the idea that diaspora investments might be crucial in the development of the home country.[17]

Our analysis, however, shows that the better export performance of diaspora firms with respect to domestic ones goes beyond differences in labour productivity. It might be explained, at least partly, by another competitive advantage diaspora firms have over domestic ones: a better access and attention to information and trade opportunities. In support of this hypothesis we find that diaspora entrepreneurs in Sub-Saharan Africa countries are more familiar with international and regional trade agreements than both domestic firms and, interestingly, multinational enterprises (Table 6). Indeed, diaspora investors show a better knowledge of preferential trade agreements such as EBA and AGOA and of bilateral and regional trade agreements. Diaspora investors are well informed and dynamic economic agents, a precious ingredient for promoting a more beneficial connection of Sub-Saharan Africa with the global economy.

Table 6 - Familiarity with trade agreements

Familiarity with international trade agreements	Diaspora firm	Domestic firm	MNE
EBA - Everything But Arms (EU)	38.0%	23.9%	30.2%
AGOA - African Growth and Opportunity Act (USA)	59.5%	52.0%	53.8%
BTAs - Bilateral trade agreements	23.8%	20.3%	17.0%

Familiarity with regional trade agreements	Diaspora firm	Domestic firm	MNE
COMESA	81.3%	59.6%	64.9%
EAC	69.1%	42.8%	53.2%
ECOWAS	57.6%	44.5%	51.2%
SADC	46.8%	40.0%	41.8%
UEMOA	21.0%	16.8%	18.7%
CEMAC	9.6%	9.9%	13.0%
ECCAS	9.8%	9.7%	11.0%

Source: authors' elaboration on Africa Investor Survey 2010

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[17] By performing stochastic dominance tests we find significant labour productivity heterogeneity between diaspora firms and domestic ones, with the former being more productive. Results are available from the authors upon request.

6. Concluding remarks and policy implications

This paper has analysed the export performance of diaspora firms compared to that of domestic and foreign firms in nineteen Sub-Saharan African Countries. We find that diaspora firms not only have higher probability of exporting but also a higher share of exports in total sales than the domestic ones. They, therefore, can contribute significantly to the internationalization of the African economy both on extensive and intensive margins.

Our analysis suggests that, although diaspora firms are relatively more productive than domestic ones, their better export performance goes beyond systematic differences in productivity. One of the key comparative advantages of diaspora firms is their better access to information as confirmed by the fact that they are more familiar with international and regional trade agreements than both domestic firms and, interestingly, foreign multinational enterprises.
Beyond remittances, the presence of diaspora investors and entrepreneurs in the country-of-origin's economy may, therefore, contribute to the internationalization of the domestic economy and, through this channel, play a role in helping their homelands develop.

Our results provide support to the choice of many African government and international organizations (*in primis*, the World Bank) to devote a growing attention to their diaspora communities in order to capitalize on the asset that the African diaspora represents and to better systematize its contributions to the Africa's economic development.

In the framework of general foreign direct investment attraction policies there is scope for a specific strategy to encourage diaspora investments. Indeed, as any other potential investor, diasporans require a favourable business environment, a sound and transparent financial sector, rapid and efficient court systems, and a safe working environment. At the same time, however, African governments would be wise to pay attention to specific aspects that could encourage greater participation and contact by diaspora members in their homelands and, therefore, to facilitate investments such as: improving the embassies' role in providing information on trade and investment opportunities as well as in supporting business and trade forums to attract diasporan investors; facilitating and actively supporting transnational social network between host and home countries; granting diaspora members political rights for instance by allowing for dual citizenship and by facilitating voting by citizens who reside abroad; being inclusive without excluding those migrants who are not politically connected or those belonging to certain groups or elites; engaging in youth-oriented activities to foster relationships with the diaspora investors of tomorrow.

References

Agrawal, A., Cockburn, I., McHale, J., 2006. Gone but not forgotten: knowledge flows, labour mobility and enduring social relationship, *Journal of Economic Geography* 6 (5), 571-591.

Agrawal, A., Kapur, D., McHale, J., 2008. Brain Drain or Brain Bank: The Impact of Skilled Emigration on Poor-Country Innovation, NBER Working Paper No 14592, December.

Amendolagine, V., Boly, A., Coniglio, N.D., Prota, F., Seric, A., 2012. FDI and local linkages in developing countries: Evidence from Sub-Saharan Africa, United Nation Industrial Development Organization (UNIDO), *mimeo*.

Arnold, J., Hussinger, K., 2005. Export versus FDI in German Manufacturing: Firm Performance and Participation in International Markets, ZEW Discussion Paper n° 05-73.

Beine, M., Docquier, F., Ozden, C., 2011. Diasporas, *Journal of Development Economics* 95 (1), 30-41.

Bernard, A., Jensen, J.B., 1995. Exporters, jobs and wages in US manufacturing: 1976-1987, *Brookings Papers on Economic Activity: Microeconomics*, 67-119.

Bernard, A., Jensen, B., 1999. Exceptional exporter performance: cause, effect, or both?, *Journal of International Economics* 47 (1), 1-25.

Bernard, A., Jensen, B., 2004. Why some firms export, *Review of Economics and Statistics* 86 (2), 561-569.

Bernard, A., Eaton, J., Jensen, J.B., Kortum, S., 2003. Plants and Productivity in International Trade, *American Economic Review* 93 (4), 1268-1290.

Chacko, E., Gebre, P.H., 2012. Leveraging the diaspora for development: lessons from Ethiopia, *GeoJournal* 1-11.

Combes, P-P., Lafourcade, M., Mayer, T., 2005. The trade-creating effects of business and social networks: evidence from France, *Journal of International Economics* 66 (1), 1-29.

Delgado, M.A., Farinas, J.C., Ruano, S., 2002. Firm productivity and export markets: a non-parametric approach, *Journal of International Economics* 57 (2), 397-422.

Docquier, F., Lodigiani, E., 2010. Skilled Migration and Business Networks, *Open Economies Review* 21 (4), 565-588.

Hasan, R., Raturi, M., 2003. Does Investing in Technology Affect Exports? Evidence from Indian Firms, *Review of Development Economics* 7 (2), 279-293.

Head, K., Ries, J., 1998. Immigration and trade creation: econometric evidence from Canada, *Canadian Journal of Economics*, 31 (1), 47-62.

Javorcik, B.S., Özden, Ç., Spatareanu, M., Neagu, C., 2011. Migrant networks and foreign direct investment, *Journal of Development Economics* 94 (2), 231-241.

Kerr, W.R., 2008. Ethnic Scientific Communities and International Technology Diffusion, *Review of Economics and Statistics* 90 (3), 518-537.

Kugler, M., Rapoport, H., 2007. International labor and capital flows: complements or substitutes? *Economics Letters* 94 (2), 155-162.

Gao, T., 2003. Ethnic Chinese networks and international investment: evidence from inward FDI in China, *Journal of Asian Economics* 14 (4), 611-629.

Gillespie, K., Riddle, L., Sayre, E., Sturges, D., 1999. Homeland Investment Interest, *Journal of International Business Studies* 30 (3), 623-634.

Gould, D.M., 1994. Immigrant links to the home country: empirical implications for U.S. bilateral trade flows, *The Review of Economics and Statistics*, 76 (2), 302-316.

Leblang, D., 2010. Familiarity breeds investment: Diaspora networks and international investment, *American Political Science Review* 104 (3), 584-600.

Melitz, M., 2003. The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity, *Econometrica* 71 (6), 1695-1725.

Melitz, M., Ottaviano, G.I.P., 2008. Market size, trade, and productivity, *Review of Economic Studies* 75 (1), 295–316.

Nielsen, T.M., Riddle, L., 2007. Why Diasporas Invest in the Homelands: A Conceptual Model of Motivation, Working Paper Series, School of Business, George Washington University, Washington, DC, http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=987725.

Nielsen, T.M., Riddle, L., 2010. Investing in Peace: The Motivational Dynamics of Diaspora Investment In Post-Conflict Economies, *Journal of Business Ethics* 89 (4), 435-448.

Ottaviano, G.I.P., Martincus, C.V., 2009. SMEs in Argentina: who are the exporters? *Small Business Economics* 37 (3), 341-361.

Ozler, S., 2000. Export Orientation and Female Share of Employment: Evidence from Turkey, *World Development* 28 (7), pp. 1239-1248.

Pearson, R., 1998. Nimble fingers revisited: Reflections on women and Third World industrialization in the late twentieth century, in C. Jackson and R. Pearson (Eds.) *Feminist Visions of Development: Gender Analysis and Policy*, London: Routledge.

Ratha, D., Mohapatra, S., 2011. Preliminary estimates of Diaspora savings, Migration and Development Brief 14, World Bank, Washington, DC.: World Bank.

Ratha, D., Mohapatra, S., Özden, C., Plaza, S., Shaw, W., Shimeles, A., 2011. Leveraging Migration for Africa. Remittances, Skills, and Investments, Washington, DC.: World Bank.

Rauch, J., 2003. Diasporas and Development: Theory, Evidence and Programmatic Implications, Department of Economics, University of California at San Diego.

Rauch, J., Trindade, V., 2002. Ethnic Chinese networks in international trade, *The Review of Economics and Statistics* 84 (1), 116–130.

Regets, M., 2007. Research issues in the international migration of highly skilled workers: a perspective with data from the Untied States, National Science Foundation Working Paper SRS 07-203, June.

Riddle, L., 2008. Diasporas: Exploring their development potential, *ESR Review* 10, 28-35.

Riddle, L., Brinkerhoff, J.M., Nielsen, T.M., 2008. Partnering to beckon them home: public-sector innovation for diaspora foreign investment promotion, *Public Administration and Development* 28 (1), 54-66.

Roberts, M.J., Tybout, J.R., 1997. The decision to export in Colombia: An empirical model of entry with sunk costs, *American Economic Review* 87 (4), 545-564.

Saxenian, A., 2006. *The new Argonauts: regional advantage in a global economy*, Cambridge, MA: Harvard University Press.

Sheffer, G., 1986. A new field of study: modern diasporas in international politics, in G. Sheffer (Ed.) *Modern Diasporas in International Politics*, London and Sydney: Croom Helm.

Standing, G., 1989. Global feminization through flexible labor, *World Development* 17 (7), 1077-1095.

Stark, O., Helmenstein, C., Prskawetz, A., 1998. Human Capital Depletion, Human Capital Formation, and Migration: A Blessing or a 'Curse'? *Economic Letters* 60 (3), 363-367.

UNIDO, 2012. *Africa Investor Report 2011. Towards evidence-based investment promotion strategies*, Vienna.

Wei, Y., Balasubramanyam, V.N., 2006. Diaspora and Development, *The World Economy* 29 (11), 1599-1609.

World Bank, 2011. *Migration and Remittances Factbook 2011*, Washington DC.

Appendix A – Lists of variables and summary statistics

Variable	Definition	Source	Mean	Std. Dev.
Exporter status	Binary variable taking the value of 1 if the firm exports and 0 otherwise	Africa Investor Survey 2010 (UNIDO)	0.234	0.423
Export intensity	Export to sales ratio	Africa Investor Survey 2010 (UNIDO)	0.188	4.761
Diaspora firm	Dummy variable equal to 1 for diaspora enterprises and 0 otherwise	Africa Investor Survey 2010 (UNIDO)	0.052	0.222
Foreign firm	Dummy variable equal to 1 for foreign multinational enterprises and 0 otherwise	Africa Investor Survey 2010 (UNIDO)	0.332	0.471
Employment	Number of employees of the firm (lagged one year)	Africa Investor Survey 2010 (UNIDO)	133.736	488.380
Labour productivity	Natural logarithm of the firm's total sales divided by the number of employees (lagged one year)	Africa Investor Survey 2010 (UNIDO)	9.895	1.666
Domestic inputs	Binary variable taking the value of 1 if the firm sources its inputs mainly from domestic providers (i.e., over 50%) and 0 otherwise	Africa Investor Survey 2010 (UNIDO)	0.253	0.435
Multi_product	Binary variable taking the value of 1 if the firm produces multiple products and 0 otherwise	Africa Investor Survey 2010 (UNIDO)	0.665	0.472
Blue-collar	Share of blue-collar workers over firm total employment	Africa Investor Survey 2010 (UNIDO)	0.668	0.211
Female employment	Share of female workers over firm total employment	Africa Investor Survey 2010 (UNIDO)	0.259	0.219
Family business	Binary variable taking the value of 1 if the firm is a family firm (ownership structure) and 0 otherwise	Africa Investor Survey 2010 (UNIDO)	0.572	0.495

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Telephone: (+43-1) 26026-0, Fax: (+43-1) 26926-69
E-mail: unido@unido.org, Internet: www.unido.org