

Does Migration Foster Exports? An African Perspective

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Abstract

This paper assesses the impact of migration on export performances of 53 African countries. In particular, it highlights and helps understand in which cases the pro-trade effect of African migrants on African trade is favored. Relying on a new dataset on international bilateral migration recently released by the World Bank spanning from 1980 to 2010, we estimate a gravity model which deals satisfactorily with heteroscedasticity and zero bilateral flows issues. Our results point at a positive effect of Diaspora for exports in Africa, which is larger for African exports than the average worldwide effect and stronger when African migrants have established within Africa. These findings seem to come partly from the substitution relationship existing between migrants and institutions both in the immigrants' source and destination countries.

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I - Introduction

Standard trade literature tends to view migration and trade as substitutes. In that framework, either workers migrate to satisfy foreign demand or foreign demand is satisfied by trading goods and services. There is a growing literature, however, emphasizing that migrant networks facilitate bilateral economic transactions by diffusing their preferences towards home goods and/or by removing informational and cultural barriers between hosts and origin countries (Rauch and Casella, 2003 among others). In this case, migration would reduce transaction costs associated with trade and may be a complement rather than a substitute to trade.

In this view, African products, in particular, might suffer from large informal trade barriers due to the relatively weak legal institutions of African countries and to inadequate and few information about international trading opportunities in these countries and could thus especially benefit from the presence of migrants. Given the large increase of African migration, the number of migrants from Sub-Saharan Africa present in the OECD countries increased by nearly 80% during the 1990s (Lucas, 2006), we can wonder whether African migration is an important factor for stimulating African exports. The aim of this paper is therefore to investigate the relationship between the stock of African migrants living all over the world and the exports of African countries.

Our contribution is twofold. First, we test the pro-trade effect of migration, identified in the literature, for the case of African countries. Second, we disentangle what are the underlying explanations and in which cases the pro-trade effect of African migrants on African trade is favored. In particular, following Dunlevy (2006) and Briant et al. (2009), we examine the role played by the quality of institutions in the immigrants' source and destination countries.

To carry out this study, we rely on a new dataset on international bilateral migration recently released by the World Bank for the years 1980, 1990, 2000 and 2010. This rich dataset is the first one with such a long time span which covers all the countries in the world. Our findings point first at a substantial positive effect of African Diaspora for African exports, which is larger than it is for the other countries in the world. This could be partly explained by the prevalence of, on average, weaker institutions in Africa, since we also find that, the weaker are the institutions of origin countries, the more migrants contribute to trade. Second, the

stimulating effect of African Diasporas on exports appears to be stronger when migrants have established within Africa than for those that settled outside Africa. Because migrants may substitute for low-quality institutions in host countries, they appear to promote exports more towards countries with weak institutions.

The remainder of the paper is organized as follows. Section 2 describes the patterns of African migration and exports. Section 3 reviews the literature. Section 4 presents the data and the empirical methodology and the results are discussed in Section 5. Finally, Section 6 concludes.

II-African Migration and Exports: an Overview

African Migration

Over the generations, African people have migrated in response to conflicts, environmental disasters or to demographic, economic and political constraints. In this paper we focus on international African migration, namely inter-country movements of people within the continent and movements from the continent to outward.

Between 1980 and 2010, the stock of African migrants in the world has been multiplied by more than 10. According to the latest available information on bilateral migrant stocks provided by the World Bank,¹ in 2010, 30.6 million African people were living in countries other than the one in which they were born (which represented about 3% of the population in Africa). In 2010, they represented 15% of the total stock of migrants in the world. In view of the significance of undocumented migration within Africa and the weak official data in many African countries, this figure is likely to be largely underestimated.²

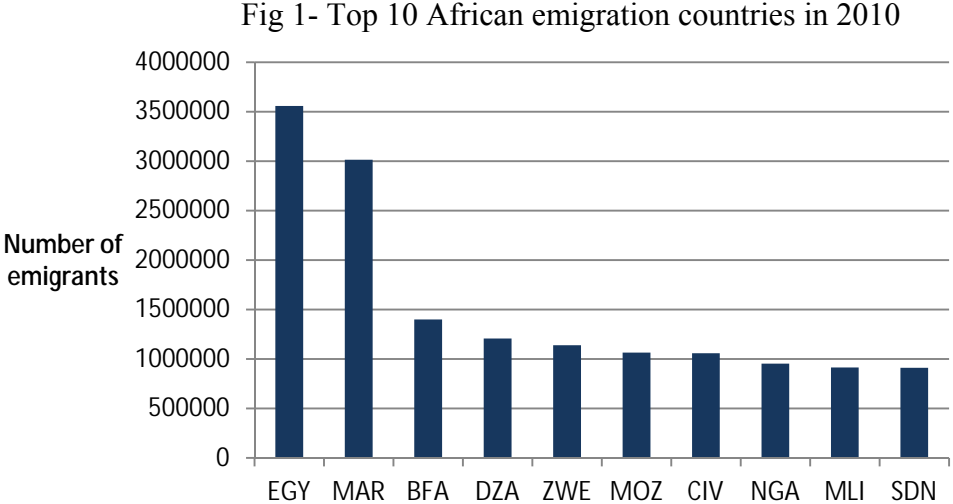
However, despite this substantial increase in emigration from Africa, the average migration rate in the continent remains relatively low and countries are not affected in the same way.

The gross emigration rates are particularly high in countries which have suffered from conflicts (Eritrea, Equatorial Guinea) or with small populations (Cape Verde, Sao Tome, Lesotho).

¹ World Bank (2010) *Migration and Factbook 2011*.

² About two-thirds of African migration are intra-continental and most of these flows are informal and not included in national official statistics.

As our data suggest, Egypt, Morocco, Burkina Faso, Algeria and Zimbabwe were the top 5 African emigration countries in 2010, representing respectively 12.4%, 10.5%, 4.8%, 4.2% and 3.9% of African emigrants.



Source: Authors, based on data from World Bank 2011.

France still appears as the leading destination for emigrants from Africa (9.9% of total emigrants from Africa in 2010). It is followed by Côte d’Ivoire (8.2%), Saudi Arabia (6.5%), South Africa (5%), the United States (4.6%) and the United Kingdom (4.3%).

The data used in this paper confirm two main stylized facts of African migration: most African migrants stay within Africa rather than migrating to other regions (see Appendix 1) and their destination countries are not very diversified. However, we observe an increase of migratory movements from the continent to outward and a progressive diversification of African migrant destinations.

In 2010, 19 African countries in our sample countries sent more than three quarters of their migrants within the African continent. Almost all migrants from Swaziland, Niger and Lesotho went to other countries of the continent (respectively 97%, 97% and 99% of migrants). The most migrant-attracting countries in Africa in 2010 were Cote d’Ivoire (8.2% of intra-African migrants), South Africa (12% of intra-African migrants) and Burkina Faso (6% of intra-African migrants). This result confirms, except for Burkina Faso, the fact that intra- African migration is largely determined by wage differences across African countries

(Hatton and Williamson, 2003). By sending many of their migrants to Europe and the Middle East, Morocco and Egypt are exceptions.

The tendency of African migrants to move within the African continent is verified all along the period studied. Note, however, that the share of African migrants who stay in Africa has decreased constantly over time (from 59% in 1980 to 51% in 2010), while the attraction exerted by Europe, the second most popular destination for African migrants, has remained stable over the period (around 28%).

In addition, we observe a certain concentration in target countries of migrants. On average the first destination countries of each African country in our sample absorbed 50% of their migrants in 2010, and South Africa, for example, absorbed more than 90% of emigrants from Lesotho or Swaziland.

African Exports

Easterly and Reshef (2010) documented the recent success of African countries in enhancing dramatically their exporting capacities. Indeed, from our data we can see that the annual average rate of African export growth is increasing over time with a surge in the last decade. African exports grew annually, on average, by 2.6% in the 1980's, by 8% in the 1990's, and by 15% in the 2000's. In 2010, exports from Africa were totaling 450 billion US dollars. Over the last 30 years, Southern Africa is the region that experienced the largest rate of average annual export growth, 13% by year, followed by Central and Western African countries whose exports grew yearly at 10%. The largest exporting region of Africa is North Africa, which accounts for about 40% of African exports

The destinations of African exports have been modified over time with the share of African exports to OECD countries decreasing from 86% in the 1980's to 60% in 2010 (see Appendix 2). The level of intra-African trade is rather limited (Foroutan and Pritchett, 1993) but grew significantly, increasing by 11% every year on average over the period 1980-2010. As a result, in 2010, African countries were exporting 11% of their products within Africa.

A large share of African exports is composed of primary commodities which are homogeneous products. Indeed, in 2000, with the classification of Rauch (1999), about 60% of African exports were goods traded on organized exchanges, 20% were products with

reference prices and only 20% of exports can be considered as differentiated products. This pattern is especially true for African exports towards non African countries. For intra-African trade, however, the types of traded goods are slightly different with a smaller share of homogeneous traded goods and about 35% of the exports being differentiated products.

III- Review of the Literature

The importance of business and social networks in overcoming informal barriers to international trade is being increasingly recognized, both in empirical work (Gould, 1994; Belderbos and Sleuwaegen, 1998) and theoretical work (Greif, 1993; Rauch and Casella, 2003). Informal trade barriers may consist of weak international legal institutions or inadequate information about international trading opportunities. Greif (1989, 1993) has established that ethnic networks can promote international trade by providing community enforcement of sanctions that deter violations of contracts in a weak international legal environment. More recently, Rauch and Casella (2002, 2003) have emphasized that ethnic networks could also promote bilateral trade by providing information on market risks and opportunities and by supplying matching and referral services. For example, ethnic networks may help producers find the right distributors for their consumer goods or assemblers find the right suppliers for their components. Felbermayr and Toubal (2012) argued that the pro-trade effect of migrants can be due both to trade costs reduction and to additional demand for goods from their source countries. They found however that the trade cost channel is the largest for differentiated goods.

Several studies analyzed empirically the effect of immigration on bilateral trade flows focusing on a specific developed country as the host country. Gould (1994) conducted his study on the United States, Head and Ries (1998) on Canada, Murat and Pistorresi (2009) on Italy, Girma and Yu (2002) on the United Kingdom, Peri and Requena-Silvente (2010) on Spain and Briant et al. (2009) on French regions. They all found a pro-trade effect of the stock of immigrants.

Ethnic Chinese networks have also been found to considerably increase bilateral trade, especially for differentiated products (Rauch and Trindade, 2002). Conducting the same analysis, Felbermayr et al. (2011) found that the Chinese network leads to a more modest

amount of trade creation and that besides the Chinese network, the three most relevant networks for trade-creation are the Moroccan, the Polish and the Turkish.

Another kind of studies made use of global bilateral migration data with no focus on a specific country or ethnic network. Felbermayr and Jung (2009) considered a South-North gravity model and established a positive trade effect between southern and northern countries. Questioning the pro-trade effect of migrants, Parsons (2012) showed a positive effect of migration only for Northern exports to the South.

Further studies suggested that the impact of immigration on trade can be different according to the characteristics of migrants (Kugler and Rapoport, 2011; Felbermayr and Jung, 2009), or to those of the migrants' country of origin, especially the quality of their institutions. While Rauch (2001) mentioned the potential role of migrants as a substitute for weak institutions, only Dunlevy (2006) and Briant et al. (2009) tested it empirically, but they focused only upon a single country and her trading partner. Dunlevy (2006) showed for example that the pro-trade effect of immigrants on the bilateral exports of the American States increases with the level of corruption of the origin country's political system. Similarly, in the case of France, Briant et al. (2009) confirmed that the pro-trade effect of migrants is more salient when they come from a country endowed with weak institutions.

IV- Empirical Analysis

The empirical model

First, we assess the impact of African migrants on African exports and test whether the effect of migrants on exports is larger for African countries compared to the world average. To do so, we start estimating a log-log gravity model of exports augmented with the logarithm of the stock of emigrants from each country of origin as an additional control variable, as expressed below:

$$\ln X_{i,j,t} = \alpha_1 \ln Migr_{i,j,t} + \alpha_2 \ln Migr_{j,i,t} + \alpha_3 \ln D_{i,j} + \alpha_4 CD_{i,j} + \alpha_5 RTA_{i,j,t} + \alpha_6 \ln Ypc_{i,t} + \alpha_7 \ln Ypc_{j,t} + \varepsilon_{i,j,t} \quad (1)$$

where $X_{i,j,t}$ is exports from migrant origin country i to migrant host country j at year t ; $Migr_{i,j,t}$ represents the number of migrants of country i living in country j ; $Migr_{j,i,t}$ represents the stock of migrants of country j living in country i ; $D_{i,j}$ is the geographical distance between country i and j ; $Ypc_{i,t}$ and $Ypc_{j,t}$ are per capita Gross Domestic Product of respectively, the migrant origin and host country at year t ; $CD_{i,j,t}$ is a set of dummies measuring cultural proximity between countries i and j (the presence of a common language, a common colonial past, a common border, colonial ties) ; and we include the variable $RTA_{i,j,t}$ to take into account the existence of trade agreements between countries i and j . Finally, $\varepsilon_{i,j}$ denotes an i.i.d error term. To control for unobserved heterogeneity between countries and multilateral trade resistance (Anderson and Van Wincoop, 2003), we also include a complete set of year fixed effects and of time varying-country fixed-effects. This first equation is estimated on 199 countries over the years 1980, 1990, 2000 and 2010.

If as expected Diaspora promotes exports, the coefficient associated with Diaspora, α_1 , should be positive and statistically significant. Then we add two interaction terms indicating whether migrants originated from the African continent or not (" $Migr \times Africa_o$ " and " $Migr \times Non_Africa_o$ "). If the trade creation effect is more important for African countries, we expect the coefficient associated with the interaction term " $Migr \times Africa_o$ " to be positive, statistically significant and higher than the coefficient associated with " $Migr \times Non_Africa_o$ ".

Second, focusing on African migrants, we examine under which conditions their pro-trade effect is favored. We examine whether the Diaspora inside and outside Africa have a different impact on African trade by including interaction terms indicating whether African migrants are living within or outside Africa (" $Migr \times Africa_d$ " and " $Migr \times Non_Africa_d$ "). This model is estimated for 53 African countries and their 197 bilateral trade partners (see Appendix 5).

Econometric issues

Equation (1) is first estimated using the OLS estimator. Given the large prevalence of zero trade flows in our dataset, which are undefined when converted into logarithms, our first estimations are based on a truncated sample where all the country-pairs that do not trade are not considered. In order to check the robustness of our estimates and to take into account the

information provided by the zero trade flows, we rely on a common technique in the literature which adds a small number (equivalent to 1000 US\$) to all exports flows. In this way, when converted into logarithms, all the trade flows will be considered. In addition, we also use the Poisson estimator since it was identified by Silva and Tenreyro (2006) as an alternative and more efficient way to deal with both heteroscedasticity and the zero trade flows in gravity models. More recently, Parsons (2012), looking at several decades, underlines the need to include country-pair fixed effects to account for unobserved bilateral factors. Therefore, to exploit the panel nature of the data and allow accounting for unobserved heterogeneity by differencing out unobserved country-pair specific characteristics, we rely also on the Poisson Fixed-Effect estimator.

Variables and data

The data on migrant stocks, our variable of interest, were obtained from the bilateral migration database of the World Bank. This database augments and updates the bilateral migration matrix originally created by the University of Sussex (as described in Parsons et al., 2007), making it the most comprehensive database on bilateral migration available at present³. Since we focus on the effect of African Diaspora on its trade dynamism we use exports as our dependent variable. Bilateral exports data were drawn from the Direction of Trade Statistics (DOTS) of the International Monetary Fund. As control variables we include some traditional variables of distance and cultural proximity coming from the CEPII distance database.⁴ In addition, we add a dummy equal to one if there is a trade agreement between the two countries (a bilateral agreement or a belonging to a common regional trade agreement). Appendix 4 presents the definition and source of variables and descriptive statistics are summarized in Appendix 5.

³ Available at www.worldbank.org/prospects/migrationandremittances

⁴ For details see <http://www.cepii.fr/anglaisgraph/bdd/distances.htm>

V- Results

World versus Africa

To begin with, we estimate equation (1) on all world countries (see Table 1, column 1) and then, we test whether the effect of Diaspora on trade is different for African countries through the introduction of two interaction terms indicating if migrants originated from Africa or not (column 2).

[Table 1 about here]

The first column suggests a mean positive and statistically significant effect of Diaspora from country i established in country j ($Migrants_{ij}$) on exports from i to j , all over the world. Results also indicate that the stock of migrants from j living in countries i ($Migrants_{ji}$) are also beneficial for exports from country i to country j , but to a lesser extent.⁵ In addition, all the control variables exhibit the expected sign. The level of GDP of both the source and the origin markets are positively linked with exports. A large distance between country-pairs is associated with a significantly lower value of trade. The contiguity between countries, the share of a common language, the existence of former colonial ties and the existence of free trade agreements are positively related to trade. Looking at column 2, we observe that the coefficient of the interaction term for migrants coming from Africa is significantly positive and larger than the coefficient of migrants coming from elsewhere in the world. This means that the positive effect of Diaspora on trade is larger for the African region. This result is confirmed and holds whatever estimator used. The impact is quantitatively important for African countries. Indeed, according to column 4, where the zero trade flows are considered, a one-percent increase of the stock of African migrants raises the exports of African countries of a coefficient of 0.214%. Given that the mean value of bilateral African migrant in our sample is 1985.1 migrants and the mean value of African exports is 42.46 million dollars, our result implies that one additional migrant creates about 4600 dollars in additional exports for his country of origin.⁶

⁵ This result is consistent with Murat and Pistoiesi (2009) who emphasized that the strongest trade creation effect for Italy comes from Italian emigrants living all over the world rather than from immigrants living in Italy.

⁶ $0.214 \times (1/1985.1) \times 42\,463\,490 \approx 4600$ dollars.

We then investigate why African migrants promote more trade than other migrants. Given the importance of good institutions to promote trade (Anderson and Marcouiller, 2002; Berkowitz et al., 2006) and the low quality of institutions in Africa, we expect the potential role of migrants to act as a substitute for weak institutions, emphasized by Rauch (2001), to be particularly relevant for Africa.

The importance of the quality of institutions in home countries

To test the Rauch's (2001) assumption, we include an interaction term between migrants and the quality of institutions in origin countries in equation (1). One of the main impediments to trade might be the existence of a weak mechanism of arbitration in exporting countries to settle disputes between traders. Therefore, we use the law and order index from ICRG as a measure of institutional quality, which assesses the strength and impartiality of the legal system and the popular observance of the law. According to descriptive statistics, a large proportion of countries with weak institutional quality are located in Africa where the average level of institutional quality is substantially lower than the world average. Indeed, on a scale from 0 to 6, the world average of the law and order index is 3.88 whereas the average value for African countries is 2.75.

[Table 2 about here]

Results, presented in Table 2, confirm that the pro-exports effect of migrants is larger the weaker institutions in exporting countries are, revealing a substitution relationship between Diaspora and institutions. This important finding confirms the argument of Dunlevy (2006) and Briant et al. (2009) which says that immigrant networks are particularly useful in promoting trade for countries suffering from institutional inefficiency and corruption (migrant networks substituting for institutions through their trust or information channels). The estimate of the threshold beyond which Diaspora stops facilitating trade, suggests first that whatever the quality of institutions is, migrants have a pro-trade effect.⁷ Moreover, with an average level of institutional quality of 2.75 in Africa, it reveals that African migrants exert a four times stronger effect on African trade than it would have been with perfect institutions.⁸

⁷ For all estimators we find a threshold which exceeds the maximum of the rule of law index.

⁸ Calculations are based on figures obtained in the column (2).

Having determined a mean positive effect of the stock of African migrants living abroad on the performance of their exports, we focus next on the sub-sample of African countries and assess the existence of heterogeneity in this relationship. Given that the stock of South-South migration is significantly larger than migration from the South to high-income OECD countries (World Bank, 2011), we investigate whether the impact is different when migrants have established within or outside Africa.

Migrants established outside Africa versus migrants established within Africa

In this part we test whether the effect of the African Diaspora established within Africa and the effect of the African Diaspora established outside Africa on African exports are different.

[Table 3 about here]

Results in Table 3 reveal a positive and statistically significant impact of the stock of international African migrants on African exports, whatever their location is. However, the positive effect of the African Diaspora established within Africa is larger and holds whatever estimator is used, while the effect of the African Diaspora established outside Africa is less robust. Results from the column (5) suggest that African migrants living in Africa contribute on average 1.6 times more to export creation than those living outside Africa.

This result could potentially be explained by the larger stock of African migrants living within Africa⁹, but also by the low quality of institutions in the African importing countries. Indeed, as explained in Briant et al. (2009) and Anderson and Marcouiller (2002), immigrants can dampen predation behavior at the border of the importing countries.

⁹ The elasticity of trade creation to new immigrant can appear larger once a critical mass has been reached (Peri and Requena-Silvente, 2010).

The quality of institutions in host countries

We include an interaction term between migrants and institutions quality (still measured by the law and order index) of host countries in equation (1) for our African sample of exporting countries.

[Table 4 about here]

The results presented in Table 4 show that the positive marginal effect of migrants on exports is favored when host countries suffer from weak institutions. Here also, while the positive effect of African migrants on trade decreases with the quality of institutions in the host countries, it appears to remain positive whatever is the quality of institutions. Again, African countries suffering on average from weaker institutions than the world average, this could partly explain why it is migrants that settled within Africa rather than outside Africa that foster the most African exports.

Robustness checks

In the previous sub-sections we identified a positive relationship between migration and exports but we focused on total exports without considering different type of goods. African countries are large exporters of primary commodities so it is interesting to verify if the relationship holds whatever type of goods is exported. Rauch (1999) established a classification of internationally traded goods in three groups: those traded on organized exchanges, those not traded on organized exchanges but possessing reference prices and all the other, that can be considered as differentiated. For disaggregated values of exports, we rely on BACI, the CEPII international trade database at the product level, constructed by Gaulier and Zignago (2010). By aggregating exports according to Rauch's classification, we obtain for each country the value of its exports of homogeneous goods (those traded on organized exchanges) and the value of its exports of differentiated goods to each of its commercial partner for the years 1980, 1990 and 2000¹⁰.

¹⁰ In this section we cannot use the year 2010, because the version of BACI that we use do not contain trade flows for the year 2010.

For the sample of our 53 African countries, the results of the effect of migration on homogeneous and differentiated goods are presented in Table 5.

[Table 5 about here]

From the estimations, we notice that African migration fosters significantly African exports for both homogeneous and differentiated goods. Moreover, because the Poisson estimator has been found to be more consistent for gravity models, we rely on the results of columns 5 and 6 which show that the trade of homogeneous goods is more fostered by African migrants than non African migrants. This result is consistent with those of Peri and Requena-Silvente (2010) and can be explained by the specificities of African countries. In these countries, where there are problems of institutional inefficiency and lack of enforcement, the presence of immigrant networks can greatly contribute to provide information and to decrease costs even for the trade of homogeneous goods.

As a second robustness test, in order to ensure that our results are not fraught with an endogeneity bias, originating from potential reverse causality between the dependent variable, exports, and our variable of interest, migration, we use the lagged value of migration instead of its current value. Moreover, in order to limit measurement errors, we measure exports by computing 3-year averages for exports data as in Felbermayr and Jung (2009). Since available data for the stock of migrants are for years 1980, 1990 and 2000 only, we regress the average value of exports over the period 1981-1983 on the stock of migrants in 1980 and all the control variables averaged over the period 1981-1983. For the two other periods, namely 1991-1993 and 2001-2003, we proceed similarly.

[Table 6 about here]

Table 6 presents the results of the same specifications than those in Table 1 but with the lagged value of the migrants' stock instead of its current value. Our findings appear robust to this alternative approach, since the pro-trade effect of migration appears still larger for migrants originating from Africa than for those originating from elsewhere in the world.

VI- Conclusion

This paper assesses whether African Diaspora promotes African exports, what drives the effect and in which cases this impact is amplified. Diasporas, dispersed all over the world, can serve as a crucial informational role to ease trade relationships by providing information on market risks and opportunities. This trade facilitation effect might be especially important for African countries whose products might be unknown and where institutions are weak.

Using a new dataset on international bilateral migration recently released by the World Bank for the years 1980, 1990, 2000 and 2010, our results suggest that migrant networks have a positive effect on trade, with an especially large effect for Africa. This larger pro-trade effect of African migrants can be partly explained by the existence of weaker institutions in Africa for which migrants are a substitute to foster trade. Going further, we find that this positive effect of African migrants on trade creation appears to be more important when migrants are established within Africa rather than outside Africa. Lastly, we show that African migrants are fostering exports whatever the type of goods considered (homogeneous or differentiated goods) and that our results seem not to suffer from the endogeneity bias, resulting from reverse causality, since they hold when we use the lagged value of the stock of migrants instead of its current value.

The findings of this paper lead to some important policy implications, both for migrant origin countries and migrant destination countries. Our results point out that migration of Africans within or outside Africa can have a positive influence on African trade dynamism and that the positive effect is even larger for migration within Africa. More needs then to be done to promote African migrants mobility and circular migration between African countries. In this perspective, the recent expression of the ECCAS' (Economic Community of Central African States) willingness to foster free movements of goods and persons inside the region can be seen as a significant step toward a higher commercial integration of African economies. Finally, a broad strand of the literature has emphasized the devastating impacts of the "brain drain" for those left behind, especially in Africa where the flight of professional and skilled people has significantly risen in the last few years. This negative effect mainly comes from the loss of the investment in their higher education made by developing countries. A more recent literature highlights however the possibility for this negative impact to be offset through North-South remittance flows, return migration or incentive effects of migration

prospects on human capital formation at home (Stark and Wang, 2002). Revealing a pro-trade effect of African Diaspora, this paper empirically shows another channel through which the Brain Drain may have positive consequences on those left behind.

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Table 1- Impact of Diaspora on Exports – World effect versus effect for African migrants

	OLS			Poisson		Poisson		
	with time varying country fixed effects and cluster with country pairs			with time varying country fixed effects		with country pairs fixed effects		
	Exports (log)			Exports (log)		Exports		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Migrants_ij (log)	0.119*** (0.00871)		0.149*** (0.0115)	0.214*** (0.0175)	0.101*** (0.00955)	0.158*** (0.0241)	0.0304*** (0.000629)	0.0910*** (0.00341)
Migrants_ij (log)*Africa_o		0.120*** (0.0156)		0.123*** (0.0121)		0.100*** (0.00958)		0.0284*** (0.000639)
Migrants_ij (log)*NAfrica_o		(0.00898)						
Distance (log)	-1.087*** (0.0294)	-1.087*** (0.0294)	-1.303*** (0.0380)	-1.323*** (0.0378)	-0.581*** (0.0262)	-0.582*** (0.0261)		
Migrants_ji (log)	0.107*** (0.00876)	0.107*** (0.00876)	0.128*** (0.0116)	0.129*** (0.0115)	0.0637*** (0.0101)	0.0632*** (0.0101)	0.00140*** (0.000678)	0.00147*** (0.000678)
Contiguity	0.211*** (0.0776)	0.210*** (0.0778)	0.116 (0.119)	0.0584 (0.118)	0.452*** (0.0382)	0.456*** (0.0383)		
Common colony	0.429*** (0.0770)	0.429*** (0.0770)	0.700*** (0.0939)	0.698*** (0.0937)	-0.340*** (0.108)	-0.336*** (0.108)		
Colony 1945	0.971*** (0.110)	0.970*** (0.111)	1.066*** (0.143)	1.051*** (0.142)	-0.208*** (0.0971)	-0.216*** (0.0970)		
Common language	0.294*** (0.0495)	0.294*** (0.0495)	0.468*** (0.0631)	0.472*** (0.0630)	0.0577 (0.0411)	0.0548 (0.0412)		
FTA	0.314*** (0.0460)	0.314*** (0.0460)	0.130*** (0.0624)	0.139*** (0.0623)	0.637*** (0.0532)	0.637*** (0.0532)	0.274*** (0.00165)	0.274*** (0.00165)
GDPc_j (log)							0.792*** (0.00189)	0.793*** (0.00189)
GDPc_i (log)							0.800*** (0.00186)	0.802*** (0.00186)
1990							-0.141*** (0.0101)	-0.144*** (0.0101)
2000							-0.0123 (0.0102)	-0.0159 (0.0102)
2010							-0.333*** (0.0106)	-0.337*** (0.0106)
Constant					5.239*** (0.470)	6.272*** (0.740)		
Observations	20,805	20,805	24,974	24,974	24,965	24,965	17,940	17,940
R-squared	0.792	0.792	0.771	0.771	0.961	0.961		
Number of idpairs							7,919	7,919

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All the regressions include full sets of year fixed effects, time-varying origin country fixed effects and time-varying destination country fixed effects. Observations are clustered by country-pair.

Table 2 - Impact of Diaspora on Exports, the Role Played by Institutions in Home Countries (measured by rule of law)

	OLS		PPML	Poisson
	with time varying country fixed effects and cluster with country pairs	with time varying country fixed effects	with time varying country fixed effects	With country pairs fixed effects and time fixed effects
	Exports (log)	1+Exports (log)	Exports	Exports
	(1)	(2)	(3)	(4)
Migrants_ij (log)	0.138*** (0.0159)	0.298*** (0.0204)	0.106*** (0.0163)	0.0695*** (0.00107)
Migrants_ij*Institutions_o	-0.00571* (0.00324)	-0.0425*** (0.00409)	-0.00130 (0.00307)	-0.00777*** (0.000190)
Institutions_o	0.334*** (0.0906)	0.750*** (0.160)	0.0202 (0.0897)	0.0789*** (0.00210)
Distance (log)	-1.100*** (0.0306)	-1.327*** (0.0408)	-0.587*** (0.0264)	
Migrants_ji (log)	0.103*** (0.00896)	0.115*** (0.0122)	0.0618*** (0.0103)	0.00452*** (0.000692)
Contiguity	0.213*** (0.0825)	0.0806 (0.127)	0.446*** (0.0387)	
Common colony	0.313*** (0.0821)	0.547*** (0.106)	-0.336*** (0.109)	
Colony 1945	0.804*** (0.115)	0.860*** (0.150)	-0.221** (0.0984)	
Common language	0.310*** (0.0505)	0.505*** (0.0665)	0.0636 (0.0412)	
FTA	0.263*** (0.0473)	0.100 (0.0659)	0.634*** (0.0537)	0.264*** (0.00167)
GDPC_j (log)				0.805*** (0.00191)
GDPC_i (log)				0.794*** (0.00201)
1990				0.204*** (0.00227)
2000				0.329*** (0.00163)
Constant	-1.463	12.65*** (1.643)	5.493*** (0.844)	
Observations	18,681	21,763	21,763	16,240
Number of idpaire	0.795	0.766		7,232

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All the regressions include full sets of year fixed effects, time-varying origin country fixed effects and time-varying destination country fixed effects. Observations are clustered by country-pair.

Table 3 - Impact of the African Diaspora on African exports, depending on whether the migrants settled within Africa or outside Africa

	OLS		Poisson	Poisson
	with time varying country fixed effects and cluster with country pairs		with time varying country fixed effects	with country pairs fixed effects
	Exports (log)	1+Exports (log)	Exports	
	(1)	(2)	(3)	(4)
Migrants_ij (log)*Africa_d	0.104*** (0.0351)	0.0954*** (0.0329)	0.123*** (0.0415)	0.120*** (0.0120)
Migrants_ij (log)*Non_Africa_d	0.0577* (0.0297)	0.0585* (0.0349)	-0.0336 (0.0333)	0.0299*** (0.00399)
Distance (log)	-1.282*** (0.120)	-1.707*** (0.124)	-1.273*** (0.208)	
Migrants_ji (log)	0.0448 (0.0273)	0.0591** (0.0267)	0.00993 (0.0366)	0.0561*** (0.00675)
Contiguity	0.912*** (0.236)	1.344*** (0.271)	0.211 (0.231)	
Common colony	0.141 (0.178)	0.662*** (0.170)	0.412 (0.324)	
Colony 1945	1.164*** (0.289)	1.014*** (0.336)	0.557 (0.348)	
Common language	0.573*** (0.151)	0.668*** (0.146)	0.575*** (0.215)	
FTA	0.506*** (0.164)	0.443*** (0.169)	0.288 (0.266)	0.239*** (0.0132)
GDP_j (log)				0.709*** (0.0193)
GDP_i (log)				0.568*** (0.0138)
1990				0.238*** (0.0507)
2000				0.560*** (0.0514)
2010				0.454*** (0.0555)
Constant	10.48*** (3.064)	13.25*** (2.681)	9.803*** (1.909)	
Observations	3,607	5,593	5,502	3,591
R-squared	0.639	0.673	0.758	
Number of idpaire				1,640

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All the regressions include full sets of year fixes effects, time-varying origin country fixed effects and time-varying destination country fixed effects. Observations are clustered by country-pair.

Table 4 - Impact of African Diaspora on Exports, the Role Played by Institutions in Host Countries

	OLS		Poisson	Poisson
	with time varying country FE and cluster with country pairs		with time varying country FE	with country pairs FE
	Exports (log)	1+Exports (log)	Exports	
	(1)	(2)	(3)	(4)
Migrants_ij (log)	0.0676 (0.0531)	0.0795 (0.0521)	0.110 (0.0722)	0.120*** (0.00881)
Migrants_ij*Rule of Law_d	0.00114 (0.0120)	-0.00493 (0.0114)	-0.0266* (0.0151)	-0.0170*** (0.00172)
Rule of Law_d	0.553 (0.360)	-0.762*** (0.244)	4.907* (2.628)	0.243*** (0.0147)
Distance (log)	-1.205*** (0.128)	-1.703*** (0.137)	-1.244*** (0.211)	
Migrants_ji (log)	0.0555* (0.0287)	0.0618** (0.0296)	0.0136 (0.0366)	0.0691*** (0.00691)
Contiguity	1.077*** (0.233)	1.461*** (0.274)	0.534** (0.230)	
Common colony	0.149 (0.191)	0.552*** (0.186)	0.421 (0.313)	
Colony 1945	1.082*** (0.286)	1.000*** (0.330)	0.527 (0.345)	
Common language	0.600*** (0.157)	0.730*** (0.159)	0.573*** (0.213)	
FTA	0.554*** (0.173)	0.515*** (0.182)	0.296 (0.269)	0.259*** (0.0134)
GDPC_j (log)				0.666*** (0.0201)
GDPC_i (log)				0.547*** (0.0140)
1990				-0.238*** (0.0206)
2000				0.0410** (0.0178)
Constant	0.0222 (2.029)	9.771*** (2.088)	-4.504 (8.194)	
Observations	3,294	4,873	4,830	3,263
R-squared	0.633	0.669	0.760	
Number of idpaire				1,512

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All the regressions include full sets of year fixed effects, time-varying origin country fixed effects and time-varying destination country fixed effects. Observations are clustered by country-pair.

Table 5 - Impact of Diaspora on Different types of Exports, Homogeneous and Differentiated Goods (Rauch's (1999) classification)

	OLS							
	with time varying country fixed effects and cluster with country pairs				Poisson (ppml)		Poisson	
	with time varying country fixed effects		with country pairs fixed effects		with time varying country fixed effects		with country pairs fixed effects	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Exports of homogeneous goods (log)	Exports of differentiated goods (log)	1+ Exports of homogeneous goods (log)	1+Exports of differentiated goods (log)	Exports of differentiated goods	Exports of homogeneous goods	Exports of differentiated goods	Exports of homogeneous goods
Migrants_ij (log)*Africa_o	0.107*** (0.0209)	0.139*** (0.0130)	0.264*** (0.0279)	0.250*** (0.0230)	0.127*** (0.0292)	0.152*** (0.0328)	0.0199*** (0.000284)	0.107*** (0.000134)
Migrants_ij (log)*NAfrica_o	0.111*** (0.0133)	0.128*** (0.00849)	0.261*** (0.0209)	0.128*** (0.0157)	0.0854*** (0.0117)	0.0563*** (0.0199)	0.0577*** (4.42e-05)	0.00180*** (6.26e-05)
Distance (log)	-1.189*** (0.0425)	-1.100*** (0.0273)	-1.307*** (0.0689)	-1.040*** (0.0550)	-0.430*** (0.0351)	-0.941*** (0.0543)		
Migrants_ij (log)	0.0582*** (0.0128)	0.110*** (0.00801)	0.252*** (0.0197)	0.150*** (0.0152)	0.0705*** (0.0117)	0.00644 (0.0182)	0.0368*** (4.08e-05)	0.0504*** (9.28e-05)
Contiguity	0.210* (0.112)	0.220*** (0.0822)	-0.0512 (0.226)	-0.123 (0.190)	0.470*** (0.0511)	0.342*** (0.0831)		
Common colony	0.394*** (0.113)	0.475*** (0.0691)	0.559*** (0.154)	0.631*** (0.127)	-0.549*** (0.156)	0.179 (0.217)		
Colony 1945	1.460*** (0.148)	0.970*** (0.0949)	1.990*** (0.301)	1.119*** (0.220)	-0.0336 (0.120)	0.304* (0.166)		
comlang_off	-0.0731 (0.0752)	0.501*** (0.0472)	0.329*** (0.117)	1.007*** (0.0899)	0.165*** (0.0432)	-0.0791 (0.0969)		
FTA	0.318*** (0.0762)	0.263*** (0.0482)	0.655*** (0.126)	0.400 (0.0991)	0.758*** (0.0596)	0.272** (0.108)	0.821*** (0.000117)	0.149*** (0.000224)
GDPG_j (log)							0.664*** (0.000126)	0.591*** (0.000251)
GDPG_i (log)							0.725*** (0.000115)	0.109*** (0.000217)
1990							0.417*** (0.000635)	0.0289*** (0.000553)
2000							0.640*** (0.000641)	0.173*** (0.000583)
Constant	4.987	11.00 (9.745)	12.06	21.72 (19.505)	8.076*** (0.673)	11.05*** (0.673)	16.814	13.685
Observations	13,903	18,787	26,252	26,252	23,194	23,097		
R-squared	0.591	0.810	0.633	0.770	0.970	0.805		
Number of idpaire							8,274	6,734

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All the regressions include full sets of year fixed effects, time-varying origin country fixed effects and time-varying destination country fixed effects. Observations are clustered by country-pair.

Table 6 – Robustness : Lagged value of migration and variables averaged over 3-year sub-periods

	OLS with time varying country fixed effects and cluster with country pairs		Poisson (ppml) with time varying country fixed effects	Poisson with country pairs fixed effects
	Exports (log)	1+Exports (log)	Exports (3)	Exports (4)
Migrants_ij (log)*Africa_o (Lag)	0.151*** (0.0146)	0.197*** (0.0167)	0.123*** (0.0219)	0.0457*** (0.00387)
Migrants_ij (log)*NAfrica_o (Lag)	0.110*** (0.00887)	0.108*** (0.0111)	0.0784*** (0.00992)	0.0223*** (0.000905)
GDPC_j (log)				0.540*** (0.00283)
GDPC_i (log)				0.626*** (0.00275)
Distance (log)	-1.152*** (0.0296)	-1.285*** (0.0364)	-0.605*** (0.0274)	
Migrants_ji (log)	0.104*** (0.00858)	0.118*** (0.0109)	0.0517*** (0.0107)	0.0163*** (0.000921)
Contiguity	0.292*** (0.0898)	0.184 (0.125)	0.481*** (0.0463)	
Common colony	0.581*** (0.0756)	0.636*** (0.0898)	-0.321*** (0.113)	
Colony 1945	1.074*** (0.104)	1.019*** (0.138)	-0.0996 (0.114)	
Common language	0.282*** (0.0499)	0.430*** (0.0611)	0.126*** (0.0388)	
FTA	0.227*** (0.0497)	0.0902 (0.0633)	0.519*** (0.0521)	0.401*** (0.00246)
Period_1991-1993				0.368*** (0.0106)
Period_2001-2003				0.577*** (0.0108)
Observations	19,844	22,660	22,655	16,514
R-squared	0.783	0.767	0.954	
Number of country pairs				8,130

Notes: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. All the regressions include full sets of year fixed effects, time-varying origin country fixed effects and time-varying destination country fixed effects. Observations are clustered by country-pair.

Appendix 3- Variable definitions and sources

Variables	Definitions	Sources
Exports _{i,j}	Total value of exports of the country <i>i</i> to the country <i>j</i> , Millions of US dollars	DOTS (IMF)
Homogeneous Exports / Differentiated Exports	Variables constructed based on Rauch (1999) classification of goods with exports flows disaggregated by products in US dollars.	BACI (CEPII) Gaulier and Zignago (2010) Available at http://www.cepii.fr/anglaisgraph/bdd/baci.htm
Migrants _i	Stock of migrants from country <i>i</i> living in country <i>j</i>	Global bilateral migration database of the World Bank, available at http://data.worldbank.org/data-catalog/global-bilateral-migration-database (for 1980 to 2000) and at www.worldbank.org/prospects/migrationandremittances (for 2010)
Migrants _j	Stock of migrants from country <i>j</i> living in country <i>i</i>	
GDPC _i	Per capita gross domestic product of country <i>i</i> , current million US dollars	World Development Indicators (2011)
GDPC _j	Per capita gross domestic product of country <i>j</i> , current million US dollars	
Distance	Geographical distance between the largest cities of <i>i</i> and <i>j</i> weighted by the proportion of the city's overall country population, km	CEPII distance database available at http://www.cepii.fr/anglaisgraph/bdd/distances.htm
Contiguity	1 for countries sharing a border	
Common Colony 1945	1 for pairs in colonial relationship post 1945	
Language	1 for countries sharing a common official language	
RTA	1 for countries having a regional or bilateral trading agreements in force	Dataset available at http://www.worldtradelaw.net/fta/ftadatabase/ftas.asp

Appendix 4- Descriptive statistics

1. Sample of all countries in the world (Tables 1 and 2)

Variable	Observations	Mean	Std. Dev.	Min	Max
Exports_ij	23570	676.28	5504.05	0	289850
Migrants_ij (log)	23570	5.13	3.10	-0.46	16.27
Migrants_Africa_o (log)	23570	1.11	2.51	0	14.13
Migrants_NonAfrica_o (log)	23570	4.02	3.50	-0.46	16.27
GDP_j (log)	23570	24.29	2.42	15.99	30.31
GDP_i (log)	23570	24.38	2.39	18.53	30.31
Distance (log)	23570	8.43	0.93	4.11	9.89
Migrants_ji (log)	23570	5.13	3.11	-0.46	16.27
Contiguity	23570	0.049	0.22	0	1
Common Colony	23570	0.101	0.30	0	1
Colony 1945	23570	0.021	0.14	0	1
Common Language	23570	0.22	0.41	0	1
RTA	23570	0.16	0.36	0	1
Rule of law_o	20643	3.88	1.58	0	6
Rule of law_Africa_o	4356	2.75	1.07	1	6

2. Sample of African origin countries with all countries of the world as destination (Tables 3 and 4)

	Observations	Mean	Std. Dev.	Min	Max
Exports_ij	5403	42.46	296.84	0	11494.9
Migrants_ij (log)	5403	4.86	3.06	0	14.13
Migrants_Africa_d (log)	5403	2.30	3.39	0	14.09
Migrants_NonAfrica_d (log)	5403	2.56	3.11	0	14.13
Migrants_ji (log)	5403	4.31	2.90	0	14.09
GDP_i (log)	5403	22.38	1.50	18.70	26.62
GDP_j (log)	5403	24.23	2.47	18.63	30.31
Distance (log)	5403	8.26	0.84	5.09	9.83
Contiguity	5403	0.08	0.27	0	1
Common Colony	5403	0.20	0.40	0	1
Colony 1945	5403	0.02	0.14	0	1
Common language	5403	0.34	0.47	0	1
RTA	5403	0.14	0.35	0	1
Rule of law_o	4356	2.75	1.07	1	6
Rule of law_d	4738	3.75	1.59	0	6
Rule of law_Africa_d	1786	2.73	1.05	1	6

Appendix 5- List of African countries included in the regressions

African origin countries: Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Republic of Congo, Democratic Republic of Congo, Cote d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, United Republic of Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe.

Destination countries: Same as origin countries in addition with: Afghanistan, Albania, American Samoa, Aruba, Antigua & Barbuda, Argentina, Armenia, Australia, Austria, Azerbaijan, The Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Belize, Bermuda, Bhutan, Bolivia, Bosnia and Herzegovina, Brazil, Brunei Darussalam, Bulgaria, Cambodia, Canada, Chile, China, Colombia, Costa Rica, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominica, Dominican Republic, Ecuador, El Salvador, Estonia, Falkland Islands, Faroe Islands, Fiji, Finland, France, Georgia, Germany, Greece, Greenland, Grenada, Guam, Guatemala, Guyana, Haiti, Honduras, Hong-Kong, Hungary, Iceland, India, Indonesia, Islamic Republic of Iran, Iraq, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Kazakhstan, Kiribati, Republic of Korea, Kuwait, Kyrgyzstan, Lao People's Democratic Republic, Latvia, Lebanon, Lithuania, Luxembourg, Macedonia FYR, Malaysia, Maldives, Malta, Mexico, Federation States of Micronesia, Republic of Moldova, Mongolia, Myanmar, Nauru, Nepal, Netherlands, Netherlands Antilles, New Caledonia, New Zealand, Nicaragua, Norway, Oman, Pakistan, Palau, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russian Federation, Saint Kitts and Nevis, Saint Lucia, St Vincent & Grenadines, Samoa, Saudi Arabia, Serbia, Singapore, Slovakia, Slovenia, Solomon Islands, Spain, Sri Lanka, Suriname, Sweden, Switzerland, Syrian Arab Republic, Taiwan, Tajikistan, Thailand, Timor-Leste, Tonga, Trinidad & Tobago, Turkey, Turkmenistan, Tuvalu, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Vanuatu, Venezuela, Viet Nam and Yemen.

Appendix 6- Correlation matrix

	Migrants_ij	Migrants_ji	GDP_i	GDP_j	Distance	Contiguity	Colony	Colony45	Language
Migrants_ij									
Migrants_ji	0.34*								
GDP_i	0.05*	0.04*							
GDP_j	0.06*	-0.004	0.03*						
Distance	-0.08*	-0.09*	-0.008*	0.09*					
Contiguity	0.23*	0.35*	0.01*	-0.02*	-0.20*				
Colony	0.02*	0.05*	-0.04*	-0.07*	-0.03*	0.09*			
Colony45	0.18*	0.03*	-0.003	0.08*	-0.03*	0.01*	-0.03*		
Language	0.07*	0.06*	-0.001	-0.01*	-0.01*	0.11*	0.51*	0.10*	
RTA	0.14*	0.15*	0.07*	-0.02*	-0.24*	0.26*	0.07*	0.007	0.09*

Note: *significant at least at 10%