Does immigration fosters the Algerian exports? A static and dynamic analysis

Lamara Hadjou

HAL Id: hal-02629520
https://hal.inrae.fr/hal-02629520

Submitted on 27 May 2020

DOES IMMIGRATION FOSTERS THE ALGERIAN EXPORTS ?
A STATIC AND DYNAMIC ANALYSIS

Dr. Lamara HADJOU
University of Montpellier 1 – UMR 1110 MOISA
lhadjou@yahoo.fr

Abstract

Algeria has a large immigrant population. It is the third largest African community in the world after that of Egypt and Morocco. Its role in the international trade of Algeria has never been object of evaluation study. In line with the recent literature developed since the 1990s, through the work of Gould (1994), on the relationship between immigration and international trade, we propose in this paper to assess the impact of Algerian immigration networks on Algerian exports. It is clear that immigrants represent an opportunity for diversification and intensification of Algerian exports. However, the involvement of immigrants in trade flows is not evident. It is then necessary to assess first the impact and degree of involvement, to propose later, elements of trade policy that can improve the impact.

Keywords: immigration, export, Algeria
JEL classification:

Résumé

L'Algérie dispose d'une importante population immigrée. Elle est la troisième plus forte communauté africaine à l'étranger après celle de l'Egypte et du Maroc. Son rôle dans le commerce international de l'Algérie n'a fait l'objet d'aucune étude d'évaluation. Dans la lignée de la littérature qui s'est développée depuis les années 1990, grâce aux travaux de Gould (1994), sur la relation entre l'immigration et le commerce international, nous proposons dans cet article d'évaluer l'impact des réseaux migratoires algériens sur les exportations algériennes. Il est clair que les immigrés représentent une chance pour la diversification et l'intensification des exportations algériennes. Cependant, l'implication des immigrés dans les courants d'échange ne relève pas de soi. Il est alors nécessaire d'évaluer dans un premier temps son impact et son degré d'implication, pour proposer par la suite, des éléments de politique commerciale pouvant améliorer cet impact.

Mots clés : immigration, exportation, Algérie

Introduction

Algeria has a large migrant population abroad. The role of the latter in the development of trade flows should be studied accurately. Diaspora , a term commonly given to this type of population, participate in boosting trade through maintaining cultural links with the country of origin, but also through the dissemination of their eating habits among the population of the Home country. The different channels are studied and highlighted in the theoretical framework . There is also a growing literature on this topic. The case of the Chinese diaspora is the most studied and most emblematic. Other diasporas as Jewish , Turkish and Greek communities have been evaluated.

The North African community, including Algeria are very poorly studied and therefore require our interest. Through a gravity model , we try to make an assessment of the impact of the Algerian diaspora on exports.

This article is structured in five main points : the first point highlights the main features of the Algerian diaspora , in terms of number of Algerians living abroad but also by geographical area and time period . The second point is a review of the literature focusing on empirical studies and the results obtained. The third and fourth points address in detail the methodology used , the model and data mobilized . Finally, the last point explains the main results.

1. **Algerian Diaspora : Some Stylized Facts**

It is necessary to clarify that the data on the Algerian immigrant population vary from one organization to another . We will mobilize the database of the United Nations (UN), which provided the most comprehensive and the most realistic estimates. Data are available for the following periods : 1960, 1970, 1980, 1990, 2000 and 2010.

Algeria is one of the 17 countries who provided the most migrants in 2007. While the immigrant population represents only about 1% of the 214 million migrants in the world recorded in 2010, but in proportion to the total population of Algeria , the rate rises to 6.8%. At this rate, Algeria has risen to 11th in the world in terms of the share of immigrants in the population of the country of departure. Algeria is a country of emigration but very little of immigration . The immigrant population living in Algeria in 2008 was , just about 0.27 % (95 000 people) of the total population. It comes mainly from Arab countries (80%), non-Arab African countries (10%) and European countries (7%) (Di Bartolomeo et al. , 2010) .

Algeria is the third African country that provides the most emigrants, after Morocco and Egypt. The number of emigrants is also fairly close to that of the two North African countries. Migration plays an important role especially for some regions of Algeria , as Kabylia . This region has , in fact, provided the first wave of Algerian emigration to France in the early 20th century. The economy of the entire region continues to depend on remittances from the Kabyle population living abroad . This very outgoing direction of the economy is due in large part to the hardness of the conditions of production in this region, crossed over a large part, by mountain ranges , unfavorable to the economic activity , including agriculture .

Before measuring the impact of immigration on foreign trade (exports) of Algeria, it is important to describe briefly the history of the formation of the Algerian diaspora, since the early 20th century and stop on its main features. It should be noted that immigration is closely linked to the Algeria 's relationship with the old colonial power (France).

The Algerian immigration starts from the year 1900/1905, to France. It was mainly labor population, rural and male predominantly and largely from the Kabylie. This immigration responded to the need of the rural population to improve their living conditions. The economy of Kabylia at this period was based on a system of subsistence, with insufficient income taken from the mountain agriculture and trade of tree crops (olives, olive oil , figs, acorns, cherries, etc.) and crafts (pottery, jewelry). This first wave, estimated in 1914 at 3,300 people, working as a workers in construction dockyard, in the mines of the Pas-de-Calais in ports and mills of Midi (Noiriel , 2008).

The need for labor force during the First World War (1914-18) will accelerate the use of colonies. The Algeria provided the largest part. After the First World War , new needs will be felt in the field of construction, which will give to the Algerian immigrants the opportunity to stay in France or to bring other members of the family living in Algeria. Thus, the number of Algerian workers in France reached 100,000 people in 1930.

The participation of the Algerian to the Second World War on the side of France, will encourage the latter to grant their French citizenship, so the total freedom of movement and the same rights and duties as other French citizens. The migratory flows from Algeria to France will know a strong growth, from 100,000 people in the years 1930 to 220, 000 in 1954 (Noiriel , 2008).

After the independence of Algeria in 1962, the Algerian become again foreign in France, but the freedom of movement is maintained and a special benefit status is reserved for them. The repatriation of French people from Algeria will grow the number of 'Algerians' in France. France enters the period of thirty glorious years with strong growth and high need for labor. As a result, the number of Algerian immigrants needed by France will more than double between 1962 (350, 000 persons) and 1982 (800, 000 persons).

The period from the 1980s to the 1990s is marked by a sharp decline in the Algerian immigration due to the economic crisis in France and Europe, but also restrictive policies implemented by France to reduce the number of immigrants, and by Algeria, who reduce sending Algerian workers in France, after the tragic events in those years (racism). In 1995, Algerian immigrants living in France are among of 932, 275 people, that is 74.5 % of the total of Algerian immigrants in the worldwide (Carim, 2010). The rest is distributed among the other European countries (14.9%), the countries of North Africa (4.2%), Arab (1.6%), North America (1,1%) and other (3.7%).

From the 1990s onwards, new trends are emerging in Algerian emigration (Labdelaoui , 2009). Migration remained relatively stable, but the reasons for immigration and destinations have changed. The new immigrants are graduates , young men and women , looking for a job rather than subsistence to feed their families, but looking for better employment conditions (salary and career) to a final integration. The trend to feminization is a phenomenon that marking a break with a former predominantly male immigration (Bouklia -Hassan , 2011). Women now account for nearly half of this population. The destination of Algerian immigrants diversified, although France is always ahead of the favorite destinations of Algerians. Now, some of the young immigrants chosen Canada and the USA . North America recorded the highest annual growth in 2002, with nearly 12.4% against 2.6% for France. Algerian immigrants in North America is estimated at over 40,000 people in 2006, two-thirds in Canada (Khelfaoui, 2006). This immigration to North America, and especially to Canada (Quebec) is distinguished by its high level of education (an average of 13.3 years of education compared to the average of other foreign communities that is 10.6 years).

Tab1 . Dispersion of Algerian immigrants by country of residence, 2010

Pays	Nombre	%
UE-27	**1171212**	**87**
including France	1057135	78
UK	40555	3
Spain	23269	1,7
Germany	20295	1,5
Italy	15861	1,2
Belgium	8004	0,5
SOUTH MEDITERRANEN COUNTRIES	**40294**	**3**
including Tunisia	15846	1,2
Morocco	13233	1
NORTH AMERICA	**32015**	**2**
including Canada	20298	1,5
United States	11717	0,5
OTHER	**107119**	**8**
including Israel	*46734*	*3*
TOTAL	**1350640**	**100**

Source
                      : World Bank, 2010

Algerian diaspora has little changed his destination since the beginning of the last century. This is a constant that marks the specificity of the Algerian diaspora, mainly installed in France (Tab1.) . As shown in the first table, more than 78% of Algerian immigrants settled in France. The United Kingdom, Belgium and the countries of southern Europe (Italy and Spain) are the secondary destinations for Algerian immigrants. The countries of North Africa and Middle East occupy a marginal and secondary place to the Algerian diaspora .

2. Literature

Diaspora networks are increasingly recognized in both the theoretical and empirical level, as a means to overcome non-tariff barriers to international trade. The relationship is the subject of a growing literature, especially in recent years. The pioneering article by Gould in 1994 already showed that the growth of Korean exports to the U.S. in the 1970s, was closely correlated with increased immigration to that country (Gould, 1994). Korean immigrants in Los Angles occupied positions of entrepreneurs specializing in the import business of Korean products. The mastering of Korean language and knowledge of networks have facilitated the exchange activities.

All studies since the pioneering article by Gould (1994) to the last article published in 2012 by Felbermayr , G. J. and F. Toubal show that the Diaspora has a positive pro-trade effect. However, the intensity of the elasticity of import or export diaspora varies from one study to another. These variations are not negligible but they are mainly explained by differences in estimation methods, samples and data used. It is clear that all diasporas do not act with the same intensity on international trade. As we have already noted, the characteristics of each diaspora (history, middle ages, middle qualification... etc.) ae likely to affect the relationship with international trade. The elasticity of export varies from 0.02 (Gould , 1994) to 0.57 (White, 2007) while the import elasticity varies from 0.01 (Gould , 1994) to 0.88 (Hong Santhapparaj , 2006). An increase in the immigrant population of 10 % would have a direct effect on exports of the host country of order of 0.2% to 5.3%. This same increase would affect in order of 0.1 % to 8.8 % the imports of the host country.

We remind here the two mechanisms through which the diaspora affects trade : exports of the host country are impacted via the mechanism of transaction costs, while imports are impacted both by transaction costs and preferences. Logically, the export elasticities must be below the import elasticities, which is not always the case. When the import elasticities are equal to or lower to export elasticities, this means that the preference of the diaspora has no effect. In the opposite case, it means that the diaspora maintains a clear preference for the products of the country of origin.

The results of Gould (1994) show that the preference of the diaspora has no effect. Transaction costs are the only mechanism through which the diaspora has an effect on trade. Helliwell (1997), Grima and Yu (2002), Rauch and Trindade (2002), Blanes (2005), Combes and al (2005), Blanes and Martin- Montaner (2006), White (2007a), White and Tadesse (2007) obtained the same result as Gould. In contrast, Head and Ries (1998), Dunlevy and Hutchinson (1999, 2001), Hong (2009), Wihte (2007b), Felbermayr and Tobal (2012) find that import elasticities are higher than the export elasticities thus confirming the idea that the preference effect of diaspora is significant.

Studies differ depending on the scale considered. Some have chosen to study the effect of the diaspora across nations (Gould, 1994 , Head and Ries, 1998, Dunlevy and Hutchinson, 1999 and 2001... etc.), others preferred regional / departmental scale (Helliwell, 1997, Wagner, Head and Ries, 2002, Combes et al, 2005 Tadesse and White, 2008 ... etc.). Past focused mostly on the impact of diaspora on regional exports. The effect is significant for all of these studies, although the intensity varies from one study to another. The difficulty in the case of these regional studies is to have complete data on this scale .

Empirical studies discern in their estimations two main types of products : homogeneous products and differentiated products. The diaspora impact more the late because of their specificities and high transaction costs. The diaspora is expected to reduce these costs more effectively than the market. Import and export elasticities for differentiated products are in some studies, like that of Rauch and Trindade (2002) two times higher (0.47 against 0.21) than in the case of homogeneous products. The studies have focused mainly on the impact of the diaspora on international trade in goods. It does not exist in our knowledge a specific studies measuring the impact of diaspora networks on international trade in services.

After a brief presentation of our model and mobilized data, we detail the results of our estimations.

3. Specification Of The Gravity Model

To measure the impact of the Algerian diaspora on exports, we will mobilize the gravity model. All the studies cited above actually use this model to assess the impact. We use the following specification, following Bratti et *al*, (2012), Andrés Artal -Tur et *al*. (2012) and Bandyopadhyay et *al*. (2008). The model is based on the basic specification obtained by Anderson and Van Winccop (2003), plus several binary variables supposed to capture non-traditional factors that impede or facilitate bilateral trade relations. Variable diaspora or migration is integrated within this group of variables as a factor that can accelerate bilateral trade.

The specification of our model takes the following general form:
Cross section data :

Ln (1 + Xij) = a + a + b Ln Ln YiYj Dij + c Ln (1 + Diaspij) + d + e Religionij Adjaij Colij + f + g + eij Zleij .... (1)

Panel data :

Ln (1 + Xtij) = a + a + b Ln Ln YtiYtj Dij + c Ln (1 + Diasptij) + d + e Religionij Adjaij Colij + f + g + Zletij wtij .... (3)

Where: wtij = uij + etij . uij is a random error term individual .

Xij are exports of country i to country j at time t ;

Yi Yj is the GDP of country i at time t multiplied by the GDP of country j at time t. These two traditional variables measure the influence of the size of market on Algerian exports . In the literature, this effect is positive and the elasticity is close to 1 ;

Dij is bilateral distance between country i and country j . This variable is intended to capture the effect of geographic proximity (transport costs) on Algerian exports ;

Diaspij is the native population of the country i living in country j at time t. This is the variable that we are interested primarily in the study. It aims to measure the impact of the Algerian diaspora on the date exports and total exports of Algeria. As shown in the table above, its influence and sgnificativité varies from one country to another, and according to the mobilized estimation methods. The caution about its impact is fundamental, especially since there is no general consensus among the authors. Its impact must also be differentiated according to the specificity of each diaspora. However, it is difficult to distinguish between immigrant communities in their respective vocations (commercial, enterprising workers ... etc.) ;

Religionij is a binary variable taking the value of 1 if the two countries i and j share a common religion and the value 0 otherwise;

Adjaij is a binary variable taking the value of 1 if the two countries i and j share a common border and the value 0 otherwise. This variable captures the potential additional benefits of proximity that are not captured by the variable distance. However, the effect of borders remains somewhat ambiguous because of its strong correlation with political borders (Fontagne et al , 2002) ;

Colij is a binary variable taking the value of 1 if the country i was colonized by country j and the value 0 otherwise. This variable is particularly important in the case of Algeria, which shares a long common history with France, promoting trade flows.

Zleij is a binary variable taking the value of 1 if the two countries i and j are members of the same free trade area and the value of 0 otherwise. This variable is introduced into the model to measure the impact of trade agreements signed by Algeria with the countries of the European Union (Euro-Mediterranean free trade area) and the Arab countries (Arab Free Trade Area). Under these agreements some products are fully exempt from customs duties, thus fostering trade;

eij error term (taking into account the omitted variables) associated with the dependent variable **Xtij** ;

a is the constant;

a, b, c , d, e , f and **g** are the model parameters to be estimated ;

t is time.

The logarithmic form of the model allows the interpretation of the parameters as elasticities. However, this form is a problem because our database contains several variables equal to 0 for exports and immigrations flows. As the logarithm of 0 does not exist, it is necessary to address this problem. There are several methods to overcome this difficulty : either delete from the sample all values Xtij and DIASPtij that are equal to zero (eg having had recourse to this method : Gould (1994), Helliwell (1997) Girma and Yu (2002), Mundra (2005), Hong and Santhapparaj (2006), White (2007b), Bandyopadhyay (2008). The second method used by Head and Ries (1998), Rauch and Trindade (2002) and White (2007a), addresses this problem by using the Tobit estimation procedure. A third method is to add a constant, often 1 to the variable 'export' and 'diaspora'. This is justified by the fact that ln (1 + x) ≈ ln (x) for high value. This is the last two methods that we take in our case like authors such Dunlevy and Hutchinson (1999, 2001), Dunlevy (2006), Combes et *al*. (2005) Head and Ries (1998), Rauch and Trindade (2002).

We have data on three periods, 1990, 2000 and 2010. So we estimate our model for the total exports over the three years. At first, the regression is in cross section. In a second step,

we construct a regression on panel data (1990, 2000 and 2010). Panel data that combine time series and cross-sectional data provide more information, more variability , less collinearity among variables, more degrees of freedom and performance .

There are several methods of estimating mobilized by the authors. Each method has advantages and disadvantages. For this reason, it is a common practice in the literature to include several estimation methods using the same database, to verify that it gives better results. Many authors have used this method like Santos and *al* (2006), Felbermayr and *al* (2010).

Two main methods will be mobilized in our cross section estimate ins (Santos and *al*, 2006) : the traditional method of ordinary least squares (OLS), the method of pseudo maximum likelihood (PPML). Santos et *al* (2006) show that the fundamental problem of the log-linearization of the empirical model in the presence of heteroskedasticity leads to non-consistent estimates with the traditional OLS method. The PPML method address this problem by providing unbiased estimators. The latter deals also with the problem of the presence of many zero values in the data . In both cases, we use the command 'robust' in *Stata* to correct heteroscedasticity. For our estimates panel mode, we use three methods used in the literature including Head and Ries (1998), Rauch and Trindade (2002) : The method of least squares grouped, the Tobit method and PPML method. The Hausman test will help to choose between the fixed or random effects. We retain only the specific effects related to time. Other wise, we can not take into account the static variables, or they are important in our model.

4.   Source Of Data

The data used in this research include Algeria and seventy two countries trading partners. We took in our sample all countries with which Algeria has business relationships that could be described as at least regular and intense. We therefore exclude countries with which Algeria trade little or not at all. Our sample thus consists of 72 countries over three years, 1990, 2000 and 2010. Unfortunately, we do not have complete data for all years, which may introduce a selection bias.

Our export data are mainly from the database UN Comtrade. It is for us the most complete. Data on GDP and population come from the base built by Prof. Angus Maddison[1] and U.S. academic colleagues, who have embarked on a project seeking to develop the largest updated database in the world based on the variables related to economic development. Data on distance and binary variables are collected from all of the same base built by CEPII[2] for researchers working with gravity models. The data on the Algerian diaspora are collected from the database of the World Bank " Global Migrant Origin Databse[3] ".

5.   Empirical Results

The discussion of our results on the relationship between diaspora and Algerian exports, will occur in two stages. In the first step, we present the results obtained by cross-sectional data study over the three years for which we have data on the stock of Algerian immigrants in the world, namely in 1990, 2000 and 2010. We compare the effect of the Algerian diaspora on exports year by year, following the same procedure as Felbermayr et *al* (2010), Rauch and Trindade (2002). Following Santos et *al* (2006), we estimate our model using two approaches : ordinary least squares (OLS) and the pseudo maximum likelihood (PPML). We compare the results of each period in terms of significance of the variables of interest, but also in terms of dispersions elasticities.

The problems related to the cross-sectional analysis and in particular the specific effects may introduce a bias in the estimates. To solve this problem of heterogeneity, the authors use

---

[1] http://www.ggdc.net/maddison/Historical_Statistics/horizontal-file_02-2010.xls

[2] Centre d'Etudes Perspectives et d'Informations Internationales

[3] http://www.migrationdrc.org/research/typesofmigration/global_migrant

panel data. We will mobilize this approach in the second stage, taking into account the nature of the specific effects (fixed or random). To strengthen our results, we will mobilize three approaches : 1. The least squares grouped like Bandyopadhyay and *al.* (2006), Murat and *al.* (2011), Bratti and *al.* (2012), 2. The Tobit method as in Head and Ries (1998), Rauch and Trindade (2002), White (2007a) and 3. PPML method as in Santos and *al.* (2006).

5.1. Results In Cross Section Mode

__The 1990s__

Following the work of Santos and al. (2006), the relevance of traditional methods (OLS - Ordinary Least Squares) estimation of gravity models are challenged. The authors emphasize the inadequacy of these approaches due to the nonlinear form of the model and the presence of many zero values. In particular, they highlight the problem of overestimation of the effect of certain variables such as the influence of the size (GDP), geographical proximity and colonial ties on trade. We find this same problem in our own results.

The table below (**Tab2**.) presents the regression results for the case of Algerian exports . The coefficients of the variables taken into account vary greatly depending on whether the estimate was made by the OLS or PPML method. The latter provides more efficient and moderate estimators. The variables sizes (Yi*Yj) and adjacency are the only ones to be significant in both cases. However, the coefficients are ten times higher in the OLS case than in the PPML one. The sign of these variables corresponds to our expectations as both positively impact the total exports of Algeria. An increase in the size of the Algerian economy and that of its partners by nearly 1% would increase about of 0.27 % the total of Algerian exports.

Tab2 . Impact of the diaspora on exports - 1990

LnXij	(1)	(2)
	OLS	PPML
LnYiYj	2.799***	0.270***
	(5.08)	(4.50)
LnDij	-2.418a	-0.208
	(-1.73)	(-1.53)
LnDiaspij	0.479	0.0445
	(1.29)	(1.22)
Adjaij	8.770**	0.803**
	(2.81)	(2.60)
Colij	-2.647	-0.426a
	(-1.06)	(-1.82)
Religionij	-1.351	-0.159
	(-0.72)	(-0.76)
Zleij	1.440	0.126
	(0.66)	(0.60)
_cons	-36.83*	-2.531
	(-2.04)	(-1.41)
R-squared	0.4854	0.2426
Log-likelihood		334.48497
N	72	72

t statistics Cluster-robust standard errors in parentheses
a p < 0.10 * p < 0.05, ** p < 0.01, *** p < 0.001

Geographical distance is significant and intense in the OLS case, but it is not the case PPML . Having a common border with Algeria result in an increase of 126% of Algerian exports. The colonial link variable is not significant in the first model, but it is in the second threshold of 10%. However, its sign is negative and does not correspond to our expectations. That would mean that the colonial link shared by Algeria and France has the effect of reduing the Algerian exports nearly by -0.43 % compared to other countries that do not have this link with Algeria.

The variable of our interests 'diaspora' is not significant in both cases. The presence of Algerian immigrants is not a priori a factor favoring exports for the 1990s. Other variables such as the common religion and free trade zone are not significant. They have no impact on Algerian exports.

The 2000s

The following table (**Tab3**.) presents the regression results for the 2000s. Compared to 1990, we find the same significant variables and the same elasticities. It is the case of the size and distance variables that seem to confirm their significant positive effect for the first and negative effect for the second on the Algerian total exports.

In contrast, the variable adjacency with positive sign and a high impact in 1990, is no longer significant in 2000. This is also the case for the variable colonial link that is significant for the year 1990 when it is no longer in 2000.

Tab3 . Impact of the diaspora on total exports - 2000

LnXij	(1)	(2)
	OLS	**PPML**
LnYiYj	2.443***	0.200***
	(4.53)	(3.93)
LnDij	-4.205**	-0.335**
	(-3.23)	(-3.12)
LnDiaspij	0.121	0.00372
	(0.40)	(0.16)
Adjaij	2.635	0.204
	(0.84)	(0.93)
Colij	0.651	-0.0345
	(0.32)	(-0.24)
Religionij	2.030	0.164
	(1.00)	(1.04)
Zleij	-2.627	-0.202
	(-1.20)	(-1.19)
_cons	-9.700	0.594
	(-0.63)	(0.47)
R-squared	0.3797	0.1570
Log-likelihood		-321.39742
N	72	72

t statistics Cluster-robust standard errors in parentheses
a $p < 0.10$ * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

All the other variables show the same non-significant coefficients between the two periods in 1990 and 2000 in both models (OLS vs. PPML). This is the case of the diaspora variable that seems to play no role in the total Algerian exports .

The 2010s

The following table presents the last regression of the Algerian total exports for the year 2010. Two main variables are significant at the 5% level. These are the size and adjacency variables. The effect of the variable size seems to be confirmed for the three periods studied even if the intensity seems to weaken over time. The adjacency variable, significant in 1990, insignificant in 2000, is significant for the year 2010. However, its impact is reduced by half between 1990 and 2010. The sharing of a common border increases total Algerian exports nearly by 39%. In contrast, the distance variable is not significant, as it was in the previous periods. The variable common religion, not significant with OLS method, is significant with the PPML method at the 10 %. Its effect appears only on the period 2010 and seems very low.

All other variables namely colonial link, free trade zone and diaspora are not significant. The diaspora seems to have no impact on total Algerian exports in 2010 as in the previous periods (1990 and 2000).

Tab4 . Impact of the diaspora on total exports – 2010

LnXij	(1)	(2)
	OLS	PPML
Ln Yi Yj	2.493***	0.174***
	(5.27)	(4.77)
LnDij	-1.129	-0.0686
	(-0.96)	(-0.77)
LnDiaspij	-0.00566	-0.000189
	(-0.03)	(-0.02)
Adjaij	4.958*	0.327*
	(2.40)	(2.20)
Colij	2.300	0.0812
	(1.24)	(0.75)
Religionij	3.143	0.222a
	(1.62)	(1.79)
Zleij	0.906	0.0874
	(0.46)	(0.59)
_cons	-37.41**	-1.068
	(-2.68)	(-0.87)
R-squared	0.3163	0.1080
Log-likelihood		-281.49695
N	72	72

t statistics Cluster-robust standard errors in parentheses
a p < 0.10 * p < 0.05, ** p < 0.01, *** p < 0.001

5.2. Results In Panel Mode

In this second step, we proceed to estimate our models in panel mode as in Bandyopadhyay (2008), Murat and *al.* (2011), Bratti and *al.* (2012), Head and Ries (1998), Rauch and Trindade (2002), White (2007a), Santos and *al.* (2006). This will take into account the unobservable specific effects associated with time and context. The inability to introduce in our models the fixed variables incites us to take into account only the time specific effects. The introduction of specific effects associated with each partner country of Algeria will effectively eliminate all our binary variables (Adjacency, Religion, Colonial Link and Free Trade Zone) because they do not vary over time.

In a first phase, we use the Hausman test to choose between the two methods that control for the specific effects : fixed effects *vs* random effects. The first also called covariance model assumes that the specific effects are constant and not random. They just change the value of the constant. The estimation is done by the grouped OLS method after the addition to the model the binary variables associated with time t. The random effects model, also called composite error model assumes that the specific effects associated with time and individuals are truly random. Their effect is not more exerted on the constant but on the random perturbation (error term) .

The Hausman test carried out on our data on total Algerian exports, led to accept the null hypothesis and choose the random effects model .

After this test, we set up a number of tests to assess the heteroscedasticity, multicollinearity and normality of residuals. We identified problems of heteroscedasticity that

we corrected using the 'robust' command in Stata. We also eliminated the problem of multicollinearity by removing the variable population strongly correlated with GDP.

The following table presents the results of our estimates in panel mode over the period 1990 to 2010. We estimate our models in three ways (OLS, Tobit and PPML) and in each approach we distinguish two specifications, the first without lagged exports variable and the second with a lagged exports variable. In total, this allows us to estimate six models. The introduction of a lagged exports variable (laggedLnXij) following the formulation of Gould (1994) and Head and Ries (1998), who interpret it as a means of partial adjustment of the model. The lagged dependent variable also partially control the specific effects of each country, such as the degree of integration into the global economy.

In the table below, we present the results of the panel regression for total Algerian exports. We mobilized three approaches and six specifications (from 1 to 6). Again, the results of the first two approaches (OLS and Tobit) are very similar, in contrast, the coefficients of the PPML approach are lower. Following Santos and *al*. (2006), we consider that the latter approach is the one that gives the most efficient coefficients.

Tab5 . Impact of the diaspora on total export - Years 1990-2010 (panel)

LnXij	(1)	(2)	(3)	(4)	(5)	(6)
	OLS-RE	OLS-RE	TOBIT-RE	TOBIT-RE	PPML-RE	PPML-RE
LnYiYj	2.869***	2.661***	2.858***	2.881***	0.252***	0.286***
	(11.16)	(9.05)	(9.00)	(8.64)	(8.75)	(8.94)
LnDij	-2.785**	-2.543**	-2.777**	-2.782**	-0.257**	-0.286**
	(-3.08)	(-2.85)	(-3.14)	(-3.08)	(-2.69)	(-2.62)
LnDiaspij	-0.0489	0.0144	-0.0392	-0.0389	-0.0139	-0.0115
	(-0.35)	(0.10)	(-0.27)	(-0.27)	(-1.51)	(-1.21)
Adjaij	6.358**	5.736**	6.325**	6.364**	0.586*	0.663*
	(2.77)	(2.80)	(2.80)	(2.77)	(2.45)	(2.45)
Colij	1.379	1.361	1.326	1.272	0.0215	-0.0774
	(1.04)	(1.01)	(0.31)	(0.29)	(0.05)	(-0.15)
Zleij	0.270	0.195	0.254	0.297	0.0126	0.0138
	(0.17)	(0.13)	(0.18)	(0.20)	(0.08)	(0.08)
Religionij	1.526	1.607	1.522	1.543	0.164	0.175
	(1.03)	(1.17)	(1.32)	(1.32)	(1.29)	(1.22)
laggedLnXij		0.0897		-0.0140		-0.0195***
		(1.21)		(-0.21)		(-5.28)
_cons	-32.14***	-30.67***	-32.00**	-32.33**	-1.330	-1.640
	(-3.67)	(-3.71)	(-2.90)	(-2.89)	(-1.20)	(-1.33)
R-squared	0.3899	0.3978	/	/	/	/
Log-likelihood	/	/	-686.923	-684.135	-882.210	-865.97
N	216	215	216	215	216	215

t statistics Cluster-robust standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

RE : Random Effect

Significant variables are the same regardless of the approaches used. These are the variables, size (GDP), geographical distance and adjacency. These results corroborate those obtained in the overall cross sectional approaches, with some minor differences. The introduction in the model of the variable lagged exports produces no noticeable effect on the significant variables or the intensity of the estimated coefficients.

The variables colonial ties and common religion has no impact on total exports . This can be explained by the nature of the products exported by Algeria, mainly standards products such as oil and gas. The special ties or affinities related to history or religion have no effect on this kind of homogenous goods. The free trade agreements signed by Algeria with the European Union and the Arab countries, don't produce any significant or positive impact on Algerian exports .

Ultimately, our variable of interest, the diaspora, has no impact on Algerian exports. The importance Algerian immigrant population in the world, particularly in countries like France, Belgium, Spain and Canada does not affect the Algerian exports. The question here is why, unlike other diasporas, including Chinese, Indian, Greek, Turkish and Moroccan, Algerian diaspora does not promote exports of the country of origin ? Several reasons could explain this fact. These include institutional and administrative constraints which destroys all efforts to promote the diversification of Algerian exports.

6. **Conclusion**

In this article, we propose a first approach trying to assess the impact of the Algerian diaspora on Algerian exports. The main result of this assessment is that the Diaspora has no impact on the Algerian exports. This absence of effect may be explained by the nature of the Algerian exports, which are oil and gas. The market of these product is essentially determined by the price. The sale of these product does not poses any particular difficulty, requiring the use of diaspora networks.

In addition, many institutional and administrative constraints are partly responsible of a weak diversification of Algerian exports and of the low involvement of the diaspora.

Algeria's total exports are impacted by three variables : the size, distance and adjacency . The size and adjacency have a positive effect on exports, the distance has a negative effect. Regional agreements have no positive impact on Algerian exports. This is also the case of variable colonial link and common religion. The nature of Algerian exports could also here explain the lack of those effects.

Bibliography

Bandyopadhyay, Subhayu, Cletus C. Coughlin and Howard J. Wall (2006) "Ethnic networks and US exports." *Review of International Economics*, 16(1): 199-213.

Bouklia-Hassane R., 2012. Migration en Algérie : nouvelles tendances, *CARIM-AS 2012/01*, Institut universitaire européen, 13 p.

Bouklia-Hassane R., 2011. La féminisation de l'immigration d'origine algérienne : un état de lieux, *CARIM-AS 2011/20*, Institut universitaire européen, 37 p.

Bouklia-Hassane R., Talahite F., 2009. Labour Markets Performance and Migration Flows in Algeria, National Background Paper, Institut universitaire européen, 62p.

Bryant, John, Murat Genç, and David Law (2009) "New Zealand's merchandise trade, 1981-2006: A graphical review." Wellington, New Zealand Institute of Economic Research, Working Paper.

Bryant, John and David Law (2004) "New Zealand's diaspora and overseas-born population." Wellington, New Zealand Treasury, Working Paper.

Combes, Pierre-Philippe, Miren Lafourcade, and Thierry Mayer (2005) "The trade-creating effects of business and social networks: evidence from France." *Journal of International Economics*, 66: 1-29.

Co, Catherine Y., Patricia Euzent, and Thomas Martin (2004) "The export effect of immigration into the USA." *Applied Economics*, 36(6): 573-83.

Di Bartolomeo A., Jaulin T., Perrin D., 2010. Profil migratoire de l'Algérie, CARIM – Profil Migratoire, Institut universitaire européen, 13p.

Dunlevy, James A. and William K. Hutchison (2001) "The pro-trade effect of immigration on American exports during period 1870 to 1910." Nashville TN, Vanderbilt University, Department of Economics Working Paper, No 01-W25.

Ehrhart H., Le Goff M., Rocher E., Singh R-J., 2012, Does Migration Foster Exports ? An African Perspective, *61st Annual Congress of the AFSE*, 30p.

Eichengreen, Barry and Douglas A. Irwin (1995) "Trade blocs, currency blocs and the reorientation of world trade in the 1930s." *Journal of International Economics*, 38(1-2): 1-24.

Facchini G., Mayda A-M., 2008. From individual attitudes to immigration policy: Theory and Evidence, *Economic Policy* 56 (2008) : 651-713.

Gabriel J. Felbermayr, Benjamin Jung and Farid Toubal (2010) "Ethnic Networks, Information, and International Trade: Revisiting the Evidence" *Annals of Economics and Statistics / Annales d'Économie et de Statistique* , No. 97/98, Migration and development (January/June 2010), pp. 41-70

Girma, Sourafel and Zhihao Yu (2002) "The link between immigration and trade: evidence from the UK." *Weltwirtschaftliches Archiv*, 138: 115-130.

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

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

Khelfaoui H., La diaspora algérienne en Amérique du Nord : une ressource pour son pays d'origine ?, *CARIM-RR 2006/04*, Institut universitaire européen, 33p.

Labdelaoui H., 2009. La dimension sociopolitique de la question migration et développement en Algérie, *CARIM-AS 2009/24*, Institut universitaire européen, 20 p.

Labdelaoui H., 2005. La politique algérienne en matière d'émigration et d'immigration, *CARIM-AS 2005/13*, Institut universitaire européen, 20 p.

Mebroukine A., 2010. La migration hautement qualifiée algérienne, tentative d'étiologie d'un sinistre. *CARIM-AS 2010/54,* Institut universitaire européen, 13 p.

Mebroukine A., 2011. Migrations, Genre et Relations Internationales : le cas de l'Algérie, *CARIM-AS 2011/07*, Institut universitaire européen, 11 p.

Plaza S., Ratha D., 2011. Diaspora for development in Africa, *The International Bank for Reconstruction and Development / The World Bank*, ISBN 978-0-8213-8258-5, 358p.

Pison, 2010. Le nombre et la part des immigrés dans la population : comparaisons internationales*, population et sociétés* N° 472, Ined, 4p.

Rauch, James E. (1999) "Networks versus markets in international trade." *Journal of International Economics*, 48(1): 7-35.

Rauch, James E. and Vitor Trindade (2002) "Ethnic Chinese networks in international trade." *The Review of Economics and Statistics*, 84(1): 116-130.

Silva, J. M. C. Santos and Silvana Tenreyno (2006) "The log of gravity." *The Review of Economics and Statistics*, 88(4): 641-658.

Tadesse, Badessa and Roger White (2008a) "Do immigrants counter the effect of cultural distance on trade? Evidence from US state-level exports." *The Journal of Socioeconomics*, 37: 2304-2318.

Tadesse, Badessa and Roger White (2008b) "Cultural distance as a determinant of bilateral trade flows: do immigrants counter the effect of cultural distances?" *Applied Economics Letters*, 99999(1): 1-6.

Tribalat M. 1997. Chronique de l'immigration. Les populations d'origine étrangère en France métropolitaine, *Population*, Volume 52, N°1, pp 163-219.

White, Roger and Bedassa Tadessa (2007) "Immigration policy, cultural pluralism and trade: evidence from the White Australia policy." *Pacific Economic Review*, 12(4): 489-509.

White, Roger and Bedassa Tadessa (2008) "Immigrants, cultural distance and U.S. state-level exports of cultural products." *The North American Journal of Economics and Finance*, 19(3):331-348.