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Governance and Skilled Migration: Evidence from sub-Saharan Africa – OECD Migration

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Abstract.

Although migration, particularly skilled migration is generally considered as a first consequence of income differences across countries, it remains a fact that the quality of institutions seems to be the most important determinant. From a theoretical perspective, the explanation of migratory flows seems therefore ambiguous. An ambiguity which is also apparent in the empirical literature. To solve it, this paper examines, on the one hand, the effects of governance on skilled migration and on the other hand, the impact of this migration on human capital formation in countries of origin. Our empirical strategy is based on a simultaneous equation model which consists of a gravity equation and a nonlinear one. We estimate this model for 33 sub-Saharan Africa/OECD countries between 2000 and 2010. Our results show that strong institutions tend to reduce emigration of skilled Africans. These results imply that skilled Africans seem more prompt in migrating, especially if the perception they have about their total involvement in societal choices does not appear to be guaranteed. The acquisition of human capital (education and health) in sub-Saharan countries is, over the short-term, negatively affected by the absence of "breeding stocks".

Keywords: sub-Saharan Africa, human capital, governance, skilled migration, gravity model, OECD.

JEL codes: F22, J15, J24, P48, O1.

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1. Introduction

International migration has historically constituted a key challenge in the economic, political and social development of countries. Indeed, despite the economic and financial crisis, migration continue to grow in the world. During the period 2000-2010, the global migrant stock grew twice as fast than during the previous decade. Organisation for Economic Co-operation and Development (OECD)[2] countries are principally the countries of destination (UN-DESA and OECD, 2013). African countries are major countries of origin. Indeed, among the migrants were countless africans. Between 1980 and 2010 the African migrants have seen their number doubled, reaching about 30.6 million people (Ehrhart et al., 2014). In addition, the number of highly educated immigrants in OECD countries has increased by 70% between 2000 and 2010. Over the same period, this growth rate had been 50% for the African immigrants, reaching a proportion of one in every nine tertiary educated persons born in Africa (UN-DESA and OECD, 2013).

OECD countries include the world's richest countries, while sub-Saharan Africa (SSA) include the poorest ones. The income differences across these two areas drove African populations to move to OECD countries towards improving their quality of life. Poverty and inequality constitute significant determinants. However, the motive for international migration are many. Social and armed conflicts also appear to be major factors for migration.

However, if theoretical and empirical analyses have consistently pointed out that institutions are a source of migration, despite the debates on the significance of this impact, the effects of different aspects of governance on skilled migration should be continuously revisited. Similarly, it is worthwhile to question the impact of this skilled migration on human capital formation in the countries of origin. Indeed, improving the governance and the human capital formation are major concerns in the economy, and particularly, for developing economies. Insofar as these concerns are closely related to that of the poverty reduction. More specifically, it would be relevant to analyze in such a setting, the relationship between governance (rule of law, political stability and absence of violence/terrorism and, voice and accountability) and skilled migration from SSA countries to OECD ones (SSA/OECD skilled migration). In other words, does governance has an impact on SSA/OECD skilled migration.

The analysis of the impact of governance on skilled migration seem to be subjects usually dealt with in the literature. Though, the relationship between governance as determinant of SSA/OECD skilled migration still appear to be interesting analysis aspects.

Consequently, considering human capital as a key factor of development of a country or a region, the purpose of this paper is to analyze the impact of governance (rule of law, political stability and absence of violence/terrorism and, voice and accountability) on SSA/OECD skilled

[2] In 2013, about half of all international migrants reside in ten countries, of which seven (07) are OECD countries namely United States of America (USA), Germany, Great-Britain, France, Canada, Australia and Spain (UN-DESA and OECD, 2013).

migration. In order to achieve this objective, we use a gravity model approach. Therefore, the method of analysis used isthe Pseudo Poisson Maximum Likelihood (PPML) technique.

The rest of the paper is organized as follows. The section 2 presents the literature review. The section 3 describes the econometric approach in terms of panel analysis based on a gravity equation. The section 4 consists of processing data. The results and discussion are presented in the section 5. The section 6 concludes.

2. Literaturereview

According to Portes (2008), the power of migration to effect change either in origin or destination countries depends on three main factors: the numbers involved, the duration of the movement and its class composition. Therefore, brain drain is an important aspect of migration, particularly from SSA. Its push and pull factors are wide ranging and complex, and differ from country to country. Indeed, in some developing countries, the attractiveness of better income and opportunities for themselves and their families, drove people to move to wealthy countries. While in others, people can be forced to leave their country of origin because of the war and/or strong political instability.

Consequently migration, whether domestic or international, constitute a change, both for migrants and for their countries of origin and destination. In this respect, it's due to a diverse range of causes in both sending and receiving countries. However, mainstream thinking seems to attribute migration exclusively to income differences across countries (Borjas, 2001). In this context, poverty would be the major determinant of migratory flows. Nevertheless, some scholars suggest that the quality of institutions better approximate the factors that best determine migration. Thus, Bergh et al. (2015) find that institutional weakness is a key factor of emigration, while absolute poverty in the country of origin, would simply limit it. Similarly, Poprawe (2015) find that corruption appears to be a determinant of migration. Likewise, Ariu et al. (2016) find that higlhy skilled migrants are more concerned with strong institutions, while low skilled migrants are likely to suffer more from bad governance, and seem to have a keen interest to leave their country of origin.

Thus, two contrasting viewpoints have become apparent. First, the disequilibrium perspective postulated that spatial differences in wages, earnings or income reflect opportunities for utility gains that can be realized through migration (Greenwood, 2005). In line with this, neo-classical propositions hold that potential migrants make a cost-benefit calculation to decide whether or not to settle abroad (Todaro and Maruszko, 1987). Indeed according to neoclassical model, the markets are complete and they work well and the migrants move to take advantage of a temporary imbalance in the geographically different labor markets. By contrast, new economists of migration theorize that the key markets, in addition to the labor market are imperfect, inaccessible and inexistent (Massey and Espinosa, 1997).

However, secondly, beyond the strictly economic considerations, the cultural and structural perspectives suggest that a minimum of negative and positive liberties is necessary to exercise their desire to migrate and their lack can force the mobility of people. Therefore, many empirical studies reveal the importance of other factors in the evolution of the international migration. For example, Bertocchi and Strozzi (2008) find a positive impact of political institutions on migration. Indeed, according to these authors, all other things being equal, the democratic countries with the better universal suffrages are proven to be more attractive destinations. This

relation can also be verified in the other direction. Indeed, Docquier et al. (2009) find that migration has an impact on the quality of the institutions. Similarly, according to Batista et al. (2016), international migration in SSA countries for instance, tend to increase the demand of political improvements by the migrants and by other individuals in their network.

However, for Robinson et al. (2005), future income levels and development of a country are generally better approximated by the actual levels of the quality of institutions.

Though, in very many African countries, the policy and institutional factors seem to have a substantial impact on migration, notably from SSA countries to rich ones, particularly, those of OECD. Indeed, a large number of migrants give political reasons to justify their departure from their country of origin. Unfortunately, these departures concern most often highly educated people. These persons have acquired their education in their countries of origin which have invested heavily in the acquisition of their human capital. Consequently, the countries of origin expecting a return on investment are deprived of human resources that largely contributed to build.

The positions of the States and those of their migrant citizens seem to be irreconcilable. In light of these facts, the countries of destination appear to be the major beneficiaries of this disagreement between the States and their emigrant citizens. Indeed, skilled migrants bring a range of social returns on their education to their host countries through the jobs they occupy in these countries.

Nevertheless, the countries of destination don't always recognize at their fair value the skills of migrants. Indeed, educational resource of migrants remain often underutilized and non-productive in the host countries. This discrepancy in educational resource which the migrants hold effectively and those in proper use would be a loss for both migrants, host countries but also and particularly, for countries of origin which have invested heavily in the education of their citizens who have become migrants.

3. Methodology

As presented above, the first equation of the model is specified as a gravity equation. The classical conception of this equation inspired by the Newton's gravity formula. In the context of migration analysis, the migration stocks between two countries are supposed to increase with their size and decay with the distance between them. In addition, gravity models for migration consider bilateral migratory flows as « force of gravity » between two countries and suggest the same relationship between this force, the masses of these two countries approximated by their respective GDPs and the distance between them.

Thus, the specification of the equation *(1)* of the previous model in their multiplicative form is:

$$\begin{aligned}\log mig_{odt} = {} & \beta_1 \log pop_{ot} + \beta_2 \log pop_{dt} + \beta_3 \log dist_{od} + \beta_4 contiguity_{od} + \\ & \beta_5 comlangoff_{od} + \beta_6 comlagethno_{od} + \beta_7 colony_{od} + \beta_{10} col45_{od} + \\ & \beta_{11} governindic_{ot} + \beta_{12} \log \frac{GDPpc_{dt}}{GDPpc_{ot}} + \mu_{ot} + \mu_{dt} + \delta_t + \varepsilon_{odt}\end{aligned}$$

(4)

where $\log mig_{odt}$ denotes the logarithm of the stock of immigrants from country *o* (origin) in country *d* (destination) at time t. $\log pop_{ot}$ and $\log pop_{dt}$ denote, respectively, the logarithm of the population in the origin (*o*) and destination (*d*) countries at time t. $\log dist_{od}$ denotes the logarithm of the geographical distance between capital cities of countries *o* and *d*. *comlangoff* is a dummy variable indicating whether the two countries share a common official language. *comlangethno* is also a dummy variable indicating whether the two countries share a language spoken by at least 9% of the population of the both countries. Two other dummies are include in the model. *colony* and *col45* respectivelyindicating whether the two countries have ever had a colonial link and have had a colonial relationship after 1945. $\log \frac{GDPpc_{dt}}{GDPpc_{ot}}$ represents relative differences in GDP per capita between the destination and origin country at time t. δ_t represents country pairs fixed effects and, μ_{ot} and μ_{dt} represent the country of origin – years and country of destination – years combinations. ε_{odt} denotes the random error term.

Econometric issues

(i) The potential presence of zero skilled migration flows. In order to estimate the log-linearized version of the gravity model, we have replaced the 0 values by a very small value (1) and then transform the variable of immigrant stocks into logarithms (see Ramos and Surinãch, 2013).

(ii) In addition, we have introduced in the model' spécification time fixed effects (δ_t) to control for common temporal shocks and origin (μ_o) and destination (μ_d) fixed effects in order to deal with unobserved heteregeneity. In fact, Bertoli and Moraga (2013) argue that specifications without fixed effects may suffer biases due to the multilateral resistance to migration (Bertoli and Moraga, 2013).

(iii) Furthermore, the model has been estimated with standard errors clustered for each origin and destination country combination to take into account for potential heteroskedasticity and autocorrelation (see Ramos and Surinãch, 2013). Indeed, the heteroskedasticity results primarly from the variation in the size of countries in the migratory relation.

These problem can be address through the estimation of the gravity equation in their multiplicative form (Santos Silva and Tenreyro, 2010). Indeed, to take into account the heteroskedasticity for example, Santos Sylva and Tenreyro (2006) suggest the estimation of the gravity model in levels rather than in logarithms. In addition, the same authors propose a Pseudo Poisson Maximum Likelihood (PPML) estimation technique which is particularly appropriate to estimation of gravity equations. We have chosen to use this technique to estimate our gravity equation.

Moreover, we verify our implicit assumption which suggests that the conditional variance of the logarithm of migration from *o* to *d* ($\log mig_{odt}$) is proportional to the conditional mean. Thus, in

order to verify the evidence of the appropriateness of the specification used, we pass the RESET test (Ramsey, 1969), as described by Santos Silva and Tenreyro (2006).

4. Data and variables

Data on skilled migration, one of our variables of interest, come from the IAB brain-drain dataset. This dataset is describes in Brücker et al. (2013) and seems to be the most precisely actual datadase on international migration. This dataset contains data on the total number of foreign-born individuals aged 25 years and older, living in each of the 20 considered OECD destination countries, by year, gender, country of origin and educational level. Educational levels are distinguished in low, medium and high skilled. Data on governance indicators (Political Stability and Absence of Violence/Terrorism, Voice and Accountability, Rule of Law) come from the World Governance Indicators of the World Bank (WB, 2016). Data on GDP, GDP per capita, government expenditure on education, total (% of GDP), health expenditure, total (% of GDP), gross fixed capital formation (% of GDP), foreign direct investment, net inflows (% of GDP) come from World Development Indicators (WDI, 2015) of the World Bank. Data on human capital come from Penn Word Table (PWT), version 9.0. database (2015).

As supplementary control variables, we include traditional variables of geographical distance and cultural proximity coming from the CEPII distance database. Appendix A presents the definition and source of variables. Descriptive statistics are summarized in Appendix B. Finally, the Appendix C presents the list of our sample of countries. Our sample includes 33 countries, 26 of which are in SSA and 7 are in OECD, over the years 2000, 2005 and 2010.

5. Results and discussion

Table 1 shows the results of our regressions on impact of the governance on SSA/OECD skilled migration and on the effects of this migration on human capital formation in SSA. In this Table, a positive coefficient of explanatory variable means that an increase of this variable generate an increase in SSA/OECD skilled migration. However, the coefficient of governance indicators give a contrary interpretation. Indeed, insofar as these indicators vary from – 2.5 to 2.5 and that the less this value is the more is the “bad governance”, so, a negative coefficient of these indicators implies that “bad governance” is growing and consequently causes an increase of SSA/OECD skilled migration.

The governance in SSA countries have a significant influence on SSA/OECD skilled migration. Indeed, many factors affect international migration. Among these factors, governance has a leading role with the economic factors.

Our results suggest that the more rule of law is respected the less educated citizens migrate to foreign lands, and particularly, to OECD countries. Indeed, when citizens have higher educational levels, they are relatively sensitive to governance issues. Their perception of the rule of law on their own country is a major factor in deciding whether or not to settle abroad. The trust people have put in their society and particularly, in the justice or security significantly influences SSA/OECD skilled migration.

Similarly, political stability and absence of violence/terrorism seems to have the same type of impact on SSA/OECD skilled migration that rule of law. Indeed, when skilled nationals of the

SSA countries anticipated the occurrence of a political instability or violence in their country, they settle abroad. Likewise, it may be assumed that skilled people seem more prompt in migrating, especially if the perception they have about their total involvement in societal choices does not appear to be guaranteed.

Table 1. Impact of governance on SSA/OECD skilled migration. Years 2000, 2005, 2010. PPML Method.

Dependent variable: SSA/OECD skilled migration	**PPML Estimators**
Rule of law (origin)	***0.271******
	(0.009)
Political stability and absence of violence/terrorism (origin)	***-0.265******
	(0.006)
Voice and accountability (origin)	***-0.206******
	(0.014)
Distance (log)	-0.629***
	(0.0008)
Total population, origin (log)	0.071***
	(0.002)
Total population, destination (log)	-0.014***
	(0.003)
Common language	0.413***
	(0.0001)
Language is spoken by at least 9% of the population in both countries.	-0.220***
	(0.0002)
Colonial relationship	-0.005***
	(0.0003)
Colonial relationship after 1945	0.349***
	(0.0003)
Differences in GDP per capita (destination - origin), (log)	0.045***
	(0.002)
Constant	6.256***
	(0.086)
MR Terms	Yes
Country of origin – years FE	Yes
Country of origin – years FE	Yes
Year 2000	Yes
Year 2005	Yes
Year 2010	Yes
Number of observations	543
Number of countries	33
R^2	0.992

Notes: standard errors are in parentheses, *** p<0.01, ** p<0.5, p<0.1. Observations are clustered for each origin and destination country combination.

Source: authors.

The cultural and structural perspectives play a more important role in the explanation of migratory flows from SSA countries to OECD ones than the disequilibrium perspective. It is therefore appropriate, for the African countries, to strengthen their institutions in order to allow their populations to learn where they must improve in terms of strengthen institutions and so, governance. It is often assumed that societies with strong institutions will be the ones that will achieve future better economic prospects. Consequently, to limit highly skilled emigration, African countries have to substantially improve institutions of democratic accountability, rule of law and political stability. However, good governance is not the sole preserve of wealthy countries. Indeed, some SSA countries have address various dimensions of governance while others have deteriorated sharply on quality of governance.

6. Conclusion

Ultimately, in general terms, « bad governance » in SSA countries is positively correlated with SSA/OECD skilled migration. This bad governance may result in social and armed conflicts.Similarly, the study highlighted the important and increasing scale of SSA/OECD skilled emigration. This latter tend to have a short-term negative impact, but positive and low impact, over the long term, on human capital formation. However, skilled prospective emigrants often motivate their departure by the real or presumed constraints relating to the functioning of institutions in their country of origin. Indeed, skilled Africans seem to be more prompt to settle abroad, particularly if they don't have in and abide by the rules of their society, are not able to participate in selecting their government or will face social and armed conflicts or state violence.

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APPENDIX

APPENDIX A. DEFINITION OF VARIABLES AND SOURCES

Variables	***Definition***	***Sources***
Dependant variables		
$migflow_{odt}$	*Stock of highly skilled migrants living in OECD countries coming from SSA countries for the years 2000-2010 (5 years intervals).*	*Brücker H., Capuano, S. and Marfouk, A. (2013).* *Available at: www.abdeslammarfouk.com*
$humcapform_{ot}$	*Human capital index, based on years of schooling and returns to education.*	*Feenstra, R. C., Inklaar, R. and Timmer, M. P. (2015).* *Data from PWT 9.0 are available at : www.ggdc.net/pwt.*
Control variables		
$governindic_{ot}$	*We use three governance indicators :* *(i) Political Stability and Absence of Violence/Terrorism. This indicator measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism.* *(ii) Voice and Accountability captures perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of*	*Kaufmann, D., Kraay, A. and Mastruzzi, M. (2010).* *Available at: www.govindicators.org*

	association, and a free media. *(iii) Rule of Law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.* *The estimate of each previous governance indicators gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.*	
$\log pop_{ot}$; $\log pop_{dt}$; $GDPpc_{dt}$; and $GDPpc_{ot}$	*These variables denote, respectively, the logarithm of the population in the origin (o) and destination (d) countries at time t; GDP per capita of the countries of destination and origin.*	*Data from World Development Indicators (WDI, 2015) are available at :* *data.worldbank.org/data-catalog/world-development-indicators.*
$\log dist_{od}$;*comlangoff* ; *comlangethno* ; *colony et col45*.	*These variables denote, respectively, the logarithm of the geographical distance between capital cities of countries o and d; whether the two countries share a common official language; share a language spoken by at least 9% of the population of the both countries; have ever had a colonial link and have had a colonial relationship after 1945.*	*Data from CEPII distance are available at :* *http://www.cepii.fr/cepii/fr/bdd_modele/bdd.asp*

APPENDIX B. DESCRIPTIVE STATISTICS

Variables	Mean	Standard error	Minimum	Maximum	Observations
SSA/OECD skilled emigration	3580.788	11839.64	1	136769	546
Population of the country of origin	1.92e+07	2.91e+07	1186873	1.59e+08	546
Population of the country of destination	8.54e+07	8.81e+07	1.92e+07	3.09e+08	546

Distance	8409.638	3526.357	3045.1	17449.47	546
Political Stability and Absence of Violence/Terrorism (country of origin)	-.5867613	.9221674	-2.660021	1.056233	546
Voice and Accountability (country of origin)	-.6057752	.6208248	-1.74349	.6443471	546
Rule of law (country of origin)	-.6704326	.6628387	-2.113683	1.006921	546
GDP per capita of the country of origin	1355.066	1919.874	124.0509	9312.05	546
GDP per capita of the country of destination	34257.97	9683.155	14787.76	51845.66	546
Differences in GDP per capita between countries of destination and origin at time t.	74.31069	59.82221	3.300866	314.6531	546
Government expenditure on education, total (% of GDP) (country of origin)	3.00495	2.930022	0	14.79096	546
Health expenditure, total (% of GDP) (country of origin)	2.574678	1.330697	.887399	8.079926	546
Foreign direct investment, net inflows (% of GDP) (country of origin)	3.398848	5.067928	-4.618014	34.99214	546
Gross fixed capital formation (% of GDP) (country of origin)	18.8839	8.077114	0	41.0605	546
Colonial relationship	.1263736	.3325747	0	1	546
Colonial relationship after 1945	.1043956	.3060535	0	1	546
Common language	.4120879	.4926622	0	1	
Language is spoken by at least 9% of the	.3791209	.4856132	0	1	

population in both countries.					

Source: authors.

APPENDIX C. LIST OF COUNTRIES

COUNTRIES OF ORIGIN (SSA)	*COUNTRIES OF DESTINATION (OECD)*
Angola	*Australia*
Burundi	*Canada*
Benin	*Germany*
Burkina Faso	*Spain*
Botswana	*France*
Central African Republic	*Great-Britain*
Côte d'Ivoire	*United States of America*
Cameroon	
Congo	
Ethiopia	
Gabon	
Ghana	
Gambia	
Kenya	
Liberia	
Lesotho	
Madagascar	
Mali	
Mozambique	
Mauritius	
Malawi	
Namibia	
Niger	
Nigeria	
Rwanda	
Sudan	