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Skilled migration and the transfer of institutional norms

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Abstract

We examine two impacts of international emigration on the evolution of the institutions in the origin countries. The first impact concerns the influence of emigration per se (i.e. people who left the country can voice more or less from abroad). The second impact relates to the transfer of the norms of the host country to the home country. The existence of both impacts is confirmed using different indicators of institutional quality. The effects appear stronger when skilled emigration is considered. The main conclusions are robust to alternative econometric methods and to the use of subsamples involving developing countries only.
JEL codes: F22, J24, J61, J64.

Keywords: Institutions; International migration; Norms; Diasporas; Brain drain

1. Introduction

Labor migration is a central feature of the current international economy inducing high attention from both academics and policymakers. The most recent available estimates suggest that by 2000 there were 60 millions migrants (i.e., aged 25 or more) living in the OECD area of which 20 millions are highly skilled migrants (i.e., foreign-born workers with tertiary education). Developing countries are major suppliers of such migration. They accounted for 64.5 percent of total immigrants and 61.6 percent of skilled immigrants in the OECD. This is 15 percentage points higher than in 1990 (Docquier et al., 2007). An intense debate is taking place on the causes and consequences of such a phenomenon. Thanks to the availability of new data sets on migration, a new generation of research is now able to address empirically various aspects of migration. An important part of this literature focuses on skilled migration and brain drain.

The recent literature starts pointing to channels through which the brain drain may positively affect the sending economy Docquier and Sekkat (2006). These include a set of "feedback effects" such as remittances, return migration, the creation of business and trade networks, and the effect of migration prospects on education. Remittances often represent a major source of income in developing countries: about $US 150 billion in 2004, roughly the same amount than foreign direct investments and about three times as large as the official development aid (World Bank, 2006). Although the magnitude of return migration is difficult to measure, the fact that migrants accumulate knowledge and financial capital in rich countries before spending the rest of their career in their origin

country is also a potential important and positive feedback (Dos Santos and Postel-Vinay, 2003 and Borjas and Bratsberg, 1996).

Prospects of migration can also induce more people to invest in education at home (Mountford, 1997; Stark et al., 1998; Vidal, 1998 and Beine et al., 2001 and 2008). Moreover, the creation of migrants' networks can facilitate the movement of goods, factors, and ideas between the migrants' host and home countries.[1] (Rauch and Trindade 2002) have found that ethnic Chinese networks affect trade in differentiated goods. In the same vein, (Docquier and Lodigiani 2006) find that skilled migration has a stimulating effect on FDI.

So far, the reported findings deal with the economic impacts of brain drain on the origin country. A very recent strand of the literature is now focusing on the non-economic impacts on the origin country. Such impacts cover a wide range of dimensions including ethnic discrimination (Docquier and Rapoport, 2003), fertility (Beine et al., 2012), corruption (Mariani, 2007) and democracy (Spilimbergo, 2009 and Docquier et al., 2009).

The present paper contributes to this literature by focusing on the quality of "market friendly" institutions as measured by Kufmann et al. (1999). These are among the most widely used measures of the quality of institutions. The relevance of such focus is based on the following findings of the literature. First, there is the primary role of the quality of institutions in shaping economic growth. Second, there is a growing evidence that institutions, or at least a part of them, are not frozen but could be changed and that human capital can play an important role in this respect. Finally, the recent literature supports the existence of feedbacks from emigration to the origin country. These aspects are examined in the Section 2.

On the light of these findings, we address the three following questions: i) What is the impact of international migration on the quality of institutions in the sending country? ii) Is the level of education of emigrants important for such an impact to take place? and iii) Does a change in the quality of institution in the home country depend on their quality in the host country i.e. is there a transfer of norms? The answer to each of these questions has two components: existence or not of an impact and the sign of the impact. The possibility of a positive or a negative feedback of emigration on the home country's institutions depends on these two components. For instance, emigration may have a negative impact if individuals that can effectively voice in favor of an improvement in the quality of institutions tend to leave the country. The impact might be positive if the same individuals rely on the liberal climate in the host country in order to advocate for an improvement in the origin country. In a similar vein, the feedback through the transfer of norms can only be positive if the host country benefits from good quality of institutions.

The rest of the paper is organized as follows. Section 2 discusses the main relevant findings in the literature that motivate the question of the paper. Section 3 presents the econometric methodology, the data, and the construction of the various indicators to be used and discusses their main features. Section 4 focuses on the results and Section 5 concludes.

2. The existing literature

Before looking the specific literature devoted to feedback effects of diasporas in terms of home country institutions, it is important to summarize the main conclusions of related strands of the economic literature. First, there is an important literature showing the importance of good and market friendly institutions on growth.[2] Second, there is some compelling evidence that institutions are not frozen and can evolve over time. Among the

main drivers towards improvement of those institutions, economic prosperity in the form of higher level of GDP per capita and human capital accumulation play a prominent role.[3] Beside this, a recent growing strand of the literature has been concerned by the possible role played by international migration on the evolution of the home country institutions.

Casual observation suggests a link between migration and home country institutions. Many governments have actively financed and hosted foreign students with the objective of creating close ties with future ruling classes and spreading specific ideas. For instance, the former Patrice Lumumba University was founded in 1960 with the explicit mandate to prepare future socialist leaders in Africa. In a similar vein, some Islamic countries host and fund foreign Muslim students as a way of forming future leaders in Islamic countries. Beside such observation, there are economic mechanisms by which migration can affect home country institutions [4].

A first mechanism draws on (Hirschman's 1970) "Exit and Voice" model. In that framework, a high degree of exit can reduce the tax base so that the government finds it more profitable to reduce rent-seeking to keep people inside the country even at a higher total cost of controlling voicing. A second mechanism is based on the removal of the assumption that individuals abroad cannot voice. However, they may put pressure on international institutions and foreign states to push their local government to change. (Shain and Barth 2003) identified the following active behavior helping the achievement of such objective. Migrants or Diasporas can organize as interest groups in order to influence the foreign policy of their host vis-à-vis their home countries. They can also be active actors, influencing the foreign policies of the home country by achieving economic and political power. Finally, Diasporas can reinforce its influence on host country leaders through, for instance, investments in national projects or political contributions.

Beside exit and voice mechanisms, Diasporas can influence home countries institutions in other ways. They can play the role of transnational transporters of cultures, promote transnational ties, act as bridges or as mediators between their home and host countries, and transmit the values of pluralism and democracy as well as the entrepreneurial spirit and skills to their home countries (see Shain and Barth, 2003 for further analysis Beside their impact on education and investment, remittances might affect the origin country institutions. They can represent resources that strengthen individuals vis-à-vis state actors and encourage them to vote for non ruling parties and hold local leaders accountable (Pérez-Armendáriz and Crow, 2010).

Empirical evidence supports the role of Diasporas in influencing the host country foreign policy. Lahiriy and Raimondos-Miller (2000) reports striking relationship between the distribution of aid and the ethnic composition of some countries which suggests that Diasporas could influence the distribution of international aid. For example, a large proportion of aid from Germany goes to Turkey. Similar observation can be made for U.K. aid to India and U.S.A aid to Israel

While the above empirical evidence supports that Diasporas can influence the host country foreign policy, it is silent on whether such influence translates in a change of the home country institutions. Although not addressing this question directly, other type of evidence is relevant in our context. (Pérez-Armendáriz and Crow 2010) examined how international migration acts as a force of democratic diffusion using the results of a national survey in Mexico conducted in June, 2006. Their findings support the existence of transfer of norms from the host to the home country via migration. They identified three

effective channels trough which the transfer operates: i) migrant returns, ii) cross-border communication between migrants and people in the origin country, and iii) migrants networks. (Spilimbergo 2009) dealt with a similar issue. Focusing on the impact of foreign-educated individuals on democracy in their home countries, the author found that such individuals, indeed, promote democracy in their home country. (Constant and Tien 2010) find a similar effect of foreign education of African leaders in attracting FDI. Using cross countries data, (Docquier et al. 2009) and Beine et al. (2012) investigated the possibility of transfer of other aspects of norms. The former, found a positive effect of the total emigration rate on democracy and civil liberties in the origin country while the latter showed that international migration results in a transfer of fertility norms from host to migrants' home countries. While the above evidence rests mainly on macroeconomic estimates, there is also recent evidence on the microeconomic side. Bertoli and Marchetta (2011) document the role of fertility norms in shaping home fertility behavior in the case of Egyptian migrants returning from Gulf countries.

3. Methodology, data and descriptive analysis

3.1 Econometric specification

In order to estimate the impact of migration on institution quality, we need to consider first the econometric specification that best describes the relationship between migration and institutional quality. Obviously, institution quality might be explained by a large set of observable but also unobservable factors. Failure to account for these factors is likely to induce large biases in the way migration affects institutional quality.

Therefore, for a given norm and a given destination we estimate the following dynamic panel data model:

$$\Delta I_{it} = \alpha + \rho I_{it-1} + \theta m_{it-1} + \gamma N_{it-1} + \delta H_{it-1} + \varepsilon_{it} \quad (1)$$

where i refers to origin country, t refers to time. I_{it} and ΔI_{it} refer to the level of institution in country I at time t, and to its change with respect to the previous period (year) respectively. This specification allows for a catching-up process in institutional quality across countries through the parameter ρ. In addition to the catching-up process, Equation (1) relates the change in institutional quality to the past values of the emigration rate of origin country i (m_{it-1}) the past level of institutional quality in the host country (denoted N_{it-1}) and the past level of human capital in country i (H_{it-1}). The variable N_{it-1} captures of the norm related to institutional quality that could be transmitted by its migrants abroad (the so called Diaspora externality in terms of norm).

The underlying catching up process in the quality of institutions is related to several phenomena. First, there is a long-run global improvement of institutional quality in developing countries (see Rodrik, 2000). One of the reasons is related to the fall of the Berlin Wall and the gradual adoption by former socialist regimes of Western institutions (Sachs and Warner, 1995). Second, the values of institutional quality being bounded at the bottom and at the top of the world distribution, there is a natural trend for countries to converge towards the mean of the distribution. This is especially the case for countries with very low initial values in terms of institutional quality.

An important feature of this specification is that migration will affect the change in institutional quality and not its level. Since we have two years of the data, this model is equivalent to a panel data model with fixed effects. These fixed effects capture the role of

unobservable country specific factors. Therefore, we minimize the probability of misspecification affecting the results. The past levels of variables refer to 1990 while the change in institutional quality is between 2000 and 1990. In order to emphasize the role of education in the way migration affects institutions, each equation is estimated using total migration and skilled migration respectively.

3.2 Data

3.2.1 Institutional data

We use the (Kaufmann et al. 1999) data. They report six indicators of governance for a large set of developed and developing countries. A higher level of the indicator means better quality of institutions. The six indicators are voice and accountability, political stability, government effectiveness, regulatory quality, rule of law and control of corruption. The indicators are available over the 1994–2009 period. We use two data points for each indicator, i.e. the one related to 1994 and 2004. This allows us computing the change in governance quality over the 1994–2004 period that can be related to migration rates and country's norms computed in 1990.

3.2.2 Migration data

The estimation of equation (1) requires the use of migration data. Three important features are needed to that respect. First, we need data covering a large number of origin countries as well as most OECD countries in terms of destination. Second, the migration data need to give migration stocks broken down by the education level of the migrants in order to isolate skilled and unskilled emigration for each origin country. Third, in order to compute the institutional norms, we need to rely on bilateral stocks, i.e. stocks that are specific to each migration corridor. In order to match those requirements, we use the (Docquier and Marfouk 2006) (release 2.1) data set which is up to now the most advanced dataset complying with those requirement. The (Docquier and Marfouk 2006) data provide for two separate years (1990 and 2000) the bilateral stocks for three education levels. They cover all origin countries and 30 OECD destinations countries.

3.2.3 Migration variables

To address the three questions presented in Section 1 (i.e. the impact of international migration on institutions, the role of the level of education of emigrants and transfer of norms), we construct four variables. The first one is the total emigration rates for each origin country defined as the total stock of migrants abroad over the total working population (total labor force). The second is similar except that it focuses on skilled migration. It is defined as the stock of migrants with tertiary education over the skilled labor force (labor force with tertiary education). The third and four variables concern the norm. They are defined as the weighted average of the levels of governance quality across destination countries. One uses the weights based on total migration while the other uses skilled migration.

In formal terms, total migration rate for education level s is given by:

$$m_{it}^{s} = \frac{\sum_{j=1}^{J} M_{ijt}^{s}}{LF_{it}^{s}} \tag{2}$$

M^{s}_{ijt} denotes the stock of migrants from origin country i in country j at time t with education level s and LF^{s}_{it} is the labor force in country i at time t with education level s.

Regarding norms, we assume that migrants adopt the level of the quality of institutions prevailing in the destination countries. The norm adopted by migrants from country i to different destination, denoted $NA^s_{i,t}$ is the weighted average of the levels of institutions quality across destination countries. It depends on the education level of migrants denoted by s. The weights are the shares of the migrant stock from country i in the corresponding destination country with education level s:

$$NA^s_{i,t} = \frac{\sum_{j=1}^{J} M^s_{ijt} I_{jt}}{\sum_{j=1}^{J} M^s_{ijt}} \tag{3}$$

As pointed out in the introduction, while emigration could affect the quality of the home country institutions, the effect might be positive or negative depending on whether the quality of institutions in the host country is better or worst than in the host country. To allow for possible negative or positive transfer of norms, we use the difference in the quality of institutions in the origin and host countries. Moreover, since the norm is transmitted to country i through migrants, we assume that the transmission depends on the intensity of emigration, i.e. depends on the emigration rate of workers with skill level s:

$$N^s_{i,t} = m^s_{it}\left(NA^s_{i,t} - I^s_{it}\right) \tag{4}$$

Note that we could consider different combinations for the norms absorbed by the migrants and the way they are transmitted. For instance, we can figure out that the political norm is absorbed by all migrants but that the norm is only transmitted by educated migrants, considering only the tertiary education level. This case corresponds for instance to a situation where only skilled migrants have influence on their home country and can transmit the norms back at home. Alternatively, the norm can be assumed to be absorbed by skilled migrants but transmitted by all migrants. We assume in what follows that the absorption and transmission of the norms involve the same skill level.

In order to illustrate the constructed variables, we consider the Algerian case. The Algerian migration pattern is highly dominated by emigration to Europe, and in particular to the former colonizer France. The global emigration rate (m^s_{it}) in 1990 was respectively 5.3% and 8.3% for all migrants and skilled ones respectively. In 2000, the respective numbers were 4.4% and 9.4%, meaning an increase in the proportion of skilled Algerian residing abroad. France represents the main destination. In 1990, 90% of the Algerian migrants were located in France, against 858% for skilled ones. In 2000, the respective numbers were 84% and 59.5%. Therefore, the norms ($NA^s_{i,t}$) which are transmitted to Algeria are close to the institutional values I_{jt} observed for France. For Voice and accountability, the French values are 1.41 and 0.98 for 1990 and 2000 respectively. The Algerian values for that measure are −1.23 and −0.34 respectively, featuring an improvement in that measure over the nineties. In 1990 and 2000, the global norm in terms of voice and accountability transmitted back to Algeria was 1.34 and 1.31 respectively. This means that for both years, the differential between the norm and the value at origin $\left(NA^s_{i,t} - I^s_{it}\right)$ was positive, this differential being higher in 1990 than in 2000.

Table 1 Definitions of governance variables

Variable	Definition	Sources
Voice and accountability	The extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	Kaufmann (1999)
Political stability	The likelihood that the government will **not** be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.	Kaufmann (1999)
Government effectiveness	The quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	Kaufmann (1999)
Regulatory quality	The ability of the government to formulate and implement sound policies and regulations that permits and promotes private sector development.	Kaufmann (1999)
Rule of law	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 absence of crime and violence.	Kaufmann (1999)
Control of corruption	The extent to which public power is **not** exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	Kaufmann (1999)

4. Data analysis

Tables 1 and Table 2 presents the descriptive statistics of the dependent and explanatory variables that are included in Equation 1. Table 2 gives for all institutional variables the average values, their standard deviations, the minimum and maximum values across countries as well as the number of available observations. The statistics show that the variability of the data relative to the institutional data is quite different across institutional variables. In particular, it is obvious for the institutional norms. For two institutional dimensions, i.e. political stability and rule of law, the variability across origin countries of the migrants is quite low. This reflects that the migrants from most origin countries tend to concentrate in "politically stable" countries and countries "enforcing" the rule of the law; which could make sense.[5] The variability of the norms for the other institutional dimension is higher.

Figure 1 compares the extent of the brain drain and low skilled migration across the World's region in 2000. For that purpose we sue the global emigration rates by origin country extracted from the Docquier and Marfouk database (2006). The emigration rates are computed for all destination countries included in the database, i.e. mostly OECD countries. Then we average those emigration rates for different various large origin regions that correspond to the World Bank classification. The emigration rates for the unskilled migrants are given by the rates for the workers with primary education only, while the brain drain rates are those for the migrants with tertiary education level.

Figure 1 shows that the rates of low skilled migration are always lower than the brain drain confirming that human capital formation is positively associated with higher migration prospects. Among the six regions under consideration, Sub-Saharan Africa (SSA) and Latin America are the most affected by the brain drain. The MENA ranks third; preceding Asia and Europe. It also experiences higher brain drain than the world average.

Quality of institutions

As explained in Section 3.2, we use the (Kaufmann et al. 1999) data set which reports 6 indicators of governance for a large set of developed and developing countries. To save on space we focus on two of these indicators in this section. The aim is to highlight differences

Table 2 Descriptive statistics regarding the governance variables

	Mean	Standard deviation	Minimum	Maximum	Number of observations
Voice and accountability					
ΔI_{it}	0.000	0.404	−1.285	1.570	190
I_{it-1}	−0.040	1.006	−1.983	1.712	190
N_{it-1} Total migration	0.156	0.297	0.000	2.287	190
N_{it-1} Skilled migration	0.160	0.310	0.001	2.480	190
Political stability					
ΔI_{it}	−0.429	0.957	−3.049	1.277	178
I_{it-1}	0.289	0.123	0.171	0.660	178
N_{it-1} Total migration	0.378	0.006	0.350	0.423	178
N_{it-1} Skilled migration	0.378	0.005	0.362	0.420	178
Government effectiveness					
ΔI_{it}	0.001	0.374	−1.067	1.042	178
I_{it-1}	−0.045	1.009	−1.799	2.534	178
N_{it-1} Total migration	0.190	0.472	−0.024	2.932	178
N_{it-1} Skilled migration	0.196	0.489	−0.006	3.298	178
Regulatory quality					
ΔI_{it}	−0.172	0.123	−0.479	−0.048	180
I_{it-1}	0.363	0.145	0.219	0.670	180
N_{it-1} Total migration	−0.001	0.032	−0.185	0.083	180
N_{it-1} Skilled migration	−0.001	0.032	−0.185	0.083	180
Rule of law					
ΔI_{it}	−0.386	1.089	−2.954	1.855	165
I_{it-1}	0.272	0.170	0.149	0.793	165
N_{it-1} Total migration	0.312	0.004	0.301	0.334	165
N_{it-1} Skilled migration	0.311	0.002	0.305	0.328	165
Control of corruption					
ΔI_{it}	−0.037	0.450	−1.690	0.921	149
I_{it-1}	0.010	1.084	−2.130	2.440	149
N_{it-1} Total migration	2.420	0.364	1.081	2.972	149
N_{it-1} Skilled migration	2.501	0.271	1.334	2.998	149
m_{it-1} Total migration	8.261	16.096	0.023	89.303	193
m_{it-1} Skilled migration	2.525	5.035	0.011	33.761	193
H_{it-1}	7.718	7.033	0.144	43.820	193

Notes: I_{it-1} and ΔI_{it} refer to the (lagged) level and the change within the decade of institutional values. N_{it-1} refers to the (lagged) value of the norms in terms of the governance dimension either transmitted by all migrants or by skilled migrants only; m_{it-1} refers to migration rates; H_{it-1} refers to human capital levels.

across countries that can be used to address our main questions. The first indicator is "voice and accountability" which measures the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media. The second is "control of corruption" and measures the extent to which public power is not exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Figure 2 presents World maps highlighting countries by class of quality of governance from the 0–10 percentile (worst quality) to the 90–100 percentile (best quality). Unsurprisingly, almost

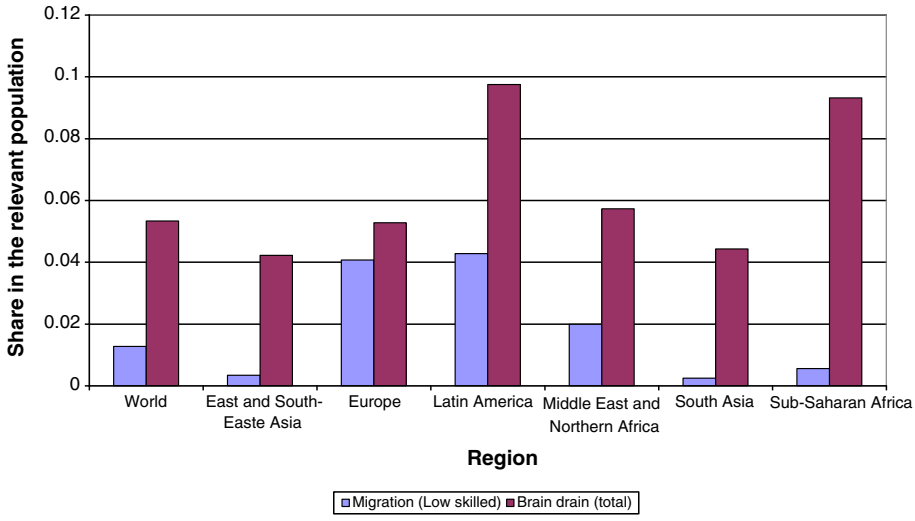

Figure 1 Migration and brain drain around the world in 2000.

all developed countries (North America, Europe and Australia) belong to the highest percentile irrespective of the indicator. Much more contrasts appear regarding developing countries. The differences also depend on the indicator at hand. Regarding "voice and accountability", most of Latin American countries belong to percentiles 25–50 and 50–75. None of them belongs to the percentile 0–10. The latter includes only African and Asian countries but not all of them. When it comes to "control of corruption", the contrast between Latin America on one hand and Africa and Asia on the other hand is less pronounced. Some Latin American countries downgrade while some African and Asian upgrade. Similar upgrading holds for the MENA but the contrasts inside the region remain.

5. The results

In this section, we present different sets of estimation results. The first set is based on the application of the OLS method to Equation (1) using the whole sample of developed and developing countries. However, since some econometric issues may affect the quality of the OLS estimates, they are discussed and addressed using other estimation methods i.e. SURE and 2SLS. Finally, since for developing countries the issues of institutions and transfer of norms are more sensitive than for developed countries, we rerun our regressions on developing countries only.

5.1 OLS estimation

This section presents and interprets the results using OLS and discusses their potential robustness. Table 3 reports the estimation results of Equation (1) on each measure of the quality of institutions considered separately. It also makes a distinction between total emigration and skilled emigration. In the first set of regressions, we use the total emigration rates. In the second set of regressions, we use skilled emigration.

The overall quality of the fit is similar for total and unskilled migration but differs highly across indicators ranging from over 90% for "regulatory quality" to below 10% for "voice and accountability". The coefficient of the lagged quality of institutions is always negative and significant confirming the existence of a catch-up process in the

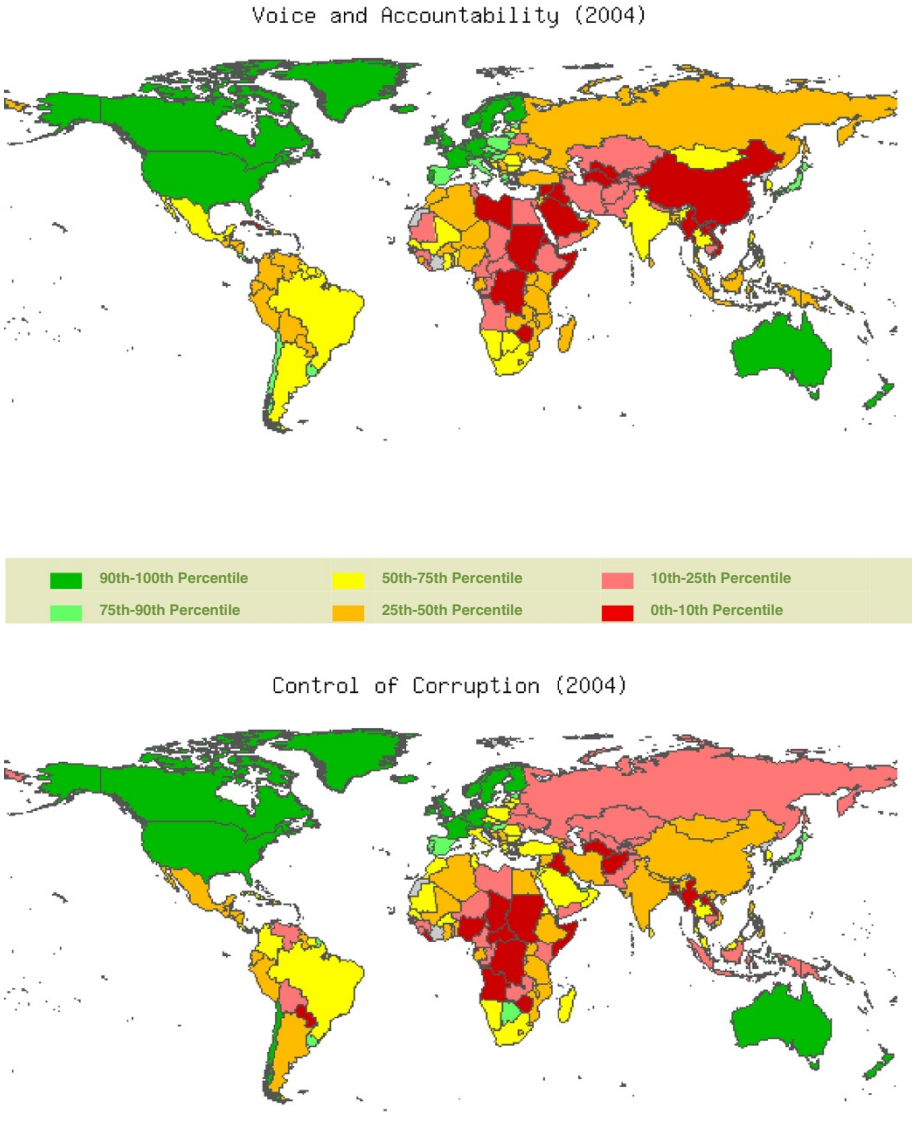

Figure 2 Institutional indicators over the world.

quality of institutions. The coefficient of the lagged human capital is, in general, positive and significant, confirming the importance of education in improving the quality of institutions. Looking at our variables of interest (migration and norm), the pattern of significant coefficients is similar for skilled and total migration.

Focusing on the coefficients of emigration, they are significant in 2 cases out of 4 in each panel. The significant coefficients are higher in absolute value for skilled than for total migration; suggesting a higher impact of skilled migration. The coefficient is negative for "voice and accountability". This might be related to the exit/voice model discussed above. Skilled emigration reduces the voicing capacity at home which weakens pressures in favor institutional improvement. Potential voicing from abroad does not seem to compensate for the loss in domestic capacity of voicing. For "regulatory quality", the coefficients are positive. Turning to the coefficients of norm, they are significant only in one case ("voice

Table 3 The impact of migration on the change in institutions (1990–2000) OLS

	Voice and accountability	Government effectiveness	Regulatory quality	Control of corruption
		Total migration		
l_{t-1}.	.072**	−0.082***	−0.875***	−0.194**
	(2.179)	(2.362)	(46.877)	(4.728)
m_{t-1}.	.968**	0.491	0.049***	0.242
	(2.121)	(0.525)	(4.017)	(0.743)
N_{t-1}.	727***	0.005	0.148*	−1.863
	(2.575)	(0.016)	(1.803)	(0.940)
H_{t-1}.	121	0.164	0.086***	1.780***
	(0.301)	(0.443)	(5.702)	(2.753)
Constant	−0.046	−0.055	0.132***	−0.199***
	(0.931)	(1.147)	(21.041)	(2.483)
Observations	190	178	180	149
Adjusted R^2	0.07	0.07	0.99	0.13
		Skilled migration		
l_{t-1}.	.072**	−0.064**	−0.836***	−0.184***
	(2.224)	(2.055)	(53.580)	(4.595)
m_{t-1}.	.721***	−1.138	0.175***	−1.545
	(3.874)	(1.209)	(5.247)	(0.851)
N_{t-1}.	601***	0.273***	0.012	0.260*
	(3.974)	(2.622)	(0.224)	(1.559)
H_{t-1}.	106	0.134	0.093***	1.759***
	(0.266)	(0.363)	(6.319)	(2.726)
Constant	−0.039	−0.039	0.120***	−0.197***
	(0.800)	(0.852)	(22.180)	(2.578)
Observations	190	178	180	149
Adjusted R^2	0.08	0.07	0.99	0.13

Robust t-statistics in parentheses.
* significant at 10%,** significant at 5% level; *** significant at 1% level.

and accountability") when total migration is considered and in two cases when skilled migration is considered. These significant coefficients are positive lending support to the hypothesis of transfer of norm from the host to the home country.

In sum, both skilled and total migrations have an impact on the quality of home country's institutions but the impact of skilled migration is higher. The impact is positive except in one case: "voice and accountability". In this case the direct effect of migration is negative but the indirect impact through the transfer of norm is still positive.

The above estimation results could, however, be impacted by two econometric issues of particular importance in our context.

First, OLS does not account for possible sources of endogeneity. One source of endogeneity is that under some conditions emigration rates are likely to depend on the change in institutions. There are basically two conditions. First, institutions in origin countries should act as push factors to emigration. For instance, low government efficiency is likely to induce skilled workers willing to set up their own business to emigrate. A second condition is that agents form expectations with respect to institutional changes.

If the future change in institutional quality is relatively correct, then there is a case for reverse causality. Under those conditions, OLS estimates are likely to be biased.

It is not sure, however, that, in our framework, the endogeneity problem is serious enough for the following reasons. First, our dependent variable is the change in the quality of institutions between 1990 and 2000 while the explanatory emigration rate pertains to 1990. Such change is not observable and unknown in 1990 and it is hard to envisage how it can explain the stock of emigration of this year especially given that such stock is the result of individual decision over the pre-1990 period. Second, while expectations could play a role, the change in the quality of institutions is determined by so many factors (especially during our period of observation which witnessed such dramatic change as the collapse of the communist block) that it is hard to support that such expectations were so well formed in 1990 that the resulting emigration outcome is highly correlated with the change in the quality of institutions ten years later. Third, the alternative to OLS estimator is the 2SLS estimator. The latter is advised only if the loss of precision and the bias induced by relatively weak instruments are more than offset by the correction of the underlying OLS bias. For instance if the explanatory variable are exogenous, OLS gives more consistent results. Therefore, to be sure of the consistency of our estimates we will run exogeneity test for emigration rate and 2SLS if exogeneity is rejected.

Second, single equation estimation does not account for possible correlation in the ε_{it} across institutional quality measures. For instance, an important shock occurring in a given country (say a *coup*) is likely to affect simultaneously a large set of institutional quality measures (say corruption, accountability and government efficiency). In order to account for such correlation, we re-estimate Equation (1) using SURE.

5.2 Exogeneity tests and 2SLS estimation

As discussed in Section 4.1 OLS estimates may be impacted by possible endogeneity of emigration rates. In this section, we address this issue by first testing the exogeneity of this variable. If it is found to be exogenous we stick to OLS results because they are consistent. If the exogeneity hypothesis is rejected, we switch to 2SLS [6].

5.2.1 Exogeneity

In our context, we can apply the "weak exogeneity" test since inference on the emigration coefficient only requires that emigration is not correlated with the disturbance term (Engle et al., 1983). One simple test (see Johnston and DiNardo, 1997) follows the 2 following steps. First, we regress the emigration on a set of exogenous variables/instruments and collect the residuals. Second, we regress the change in the quality of institutions on a constant, the emigration rate and the collected residuals. If the coefficient of the computed residuals is not significantly different from zero (using the Student test, for instance), emigration rate is considered as "weakly exogenous" with respect to the change in the quality of institutions.

Tables 4 and 5 present the results of this procedure. With respect to the choice of instruments, we build on (Docquier et al. 2007). In order to fill up vacant cells in terms of migration stocks, they use a set of variables such as colonial links or the size of the origin country. Of course, all those variables are not eligible for our purpose since we need to pick up determinants of migration flows and stocks that are not correlated with

Table 4 Regression of total and skilled migration on instruments (1990)

	Total migration	Skilled migration
Country size	0.000***	0.000***
	(2.545)	(2.662)
Low income	−0.115***	−0.036***
	(4.729)	(4.926)
Tropical	0.070***	0.024***
	(2.974)	(3.372)
British legal system	0.054**	0.026***
	(2.291)	(3.663)
Constant	0.079***	0.020***
	(4.099)	(3.451)
Observations	161	161
F-test	10.11	13.65
Adjusted R^2	0.19	0.24

Absolute value of t-statistics in parentheses; * significant at 10% level.
** significant at 5% level; *** significant at 1% level.
F test: null hypothesis all slope coefficient jointly equal to zero.

institutional variables. Therefore we choose a subset of the variables used by (Docquier et al. 2007). In particular the exogenous variables/instruments we include in the first step are: country size, dummy for low income countries, dummy for tropical countries and dummy for countries having a British legal system. For the test to be valid these variables should be sufficiently correlated with the emigration rates i.e. they should be strong in (Murray 2006)'s terminology. The latter suggests using the (Staiger and Stock 1997) "rule" for this purpose. Following this rule, the correlation can be considered as high enough if the first-stage F-statistic is above 10. The results in Table 4 confirm that this is the case.

Table 5 reports the second step of the exogeneity test. To save on space, only the coefficients of the residuals and their t-statistics are presented.[7] Both for skilled and total emigration, the tests do not reject the hypothesis of exogeneity for "voice and accountability", "regulatory quality" and "government effectiveness". For these indicators the results of OLS and SURE are validated. For the remaining indicator ("control of corruption"), the results are borderline. Exogeneity is rejected at the 10%. Hence the 2SLS method is used for the sake of robustness.

Table 5 Tests of weak exogeneity of migration rates

	Voice and accountability	Government effectiveness	Regulatory quality	Control of corruption
		Total migration		
Coefficients	0.209	0.335	−0.037	−1.140*
t-statistics	(0.437)	(0.778)	(0.208)	(1.729)
		Skilled migration		
Coefficients	−0.024	1.025	0.032	−3.089
t-statistics	(0.018)	(0.836)	(0.061)	(1.501)

Robust t-statistics in parentheses.
* significant at 10% level; ** significant at 5% level; *** significant at 1% level.

5.2.2 2SLS

The 2SLS estimation also proceeds in two steps. First, we regress the emigration rate on a set of exogenous variables/instruments and collect the fitted series. Second, we use the latter as explanatory variables of the change in the quality of institutions together with the other explanatory variables. Here again, the exogenous variables/instruments should be enough correlated with the emigration rates (strong). Moreover, they should be uncorrelated with the disturbances of the equation of interest (in our case, Equation 1). Since we use the same exogenous variables as in Table 4, the instruments are strong. To judge whether the chosen instruments are valid, (Murray 2006) suggests using the (Sargan 1958) test. The Sargan test boils down to regress the residuals from the second step estimation of the equation of interest on the instruments and uses the R^2 to test the significance of this regression. The test statistic is the number of observations times the R^2 and has a chi-square distribution. Its degree of freedom is equal to the number of instrument minus the number of variables to be instrumented.

Table 6 reports the results of the 2SLS estimation. The Sargan statistics is not significant both for total and skilled migrations; meaning that instruments are not correlated with the error term. Hence, the 2SLS estimation results of the latter are reliable. For this indicator, the coefficients of human capital are positive and significant. The coefficients pertaining to the effect of migration are never significant.

5.3 SURE estimation

In this section, we look at the robustness of the OLS results regarding the impact of emigration accounting for correlations between the various dimensions of institutions. Bang and Mitra (2009) show that measures of institutions or governance are characterized by several dimensions that can be captured by unobserved factors. The SURE estimates of the system including the three indicators, for which endogeneity was not an issue, allow accounting for the existing correlation across residuals. They are more

Table 6 The impact of migration on the change in institutions (1990–2000) 2SLS: Second Step

	Control of corruption	
	Total migration	**Skilled migration**
I_{t-1}.	.187***	−0.132***
	(3.099)	(2.484)
m_{t-1}.	186	−3.112
	(0.682)	(0.658)
N_{t-1}.	062	0.875*
	(0.107)	(1.664)
H_{t-1}.	507**	1.519**
	(2.223)	(2.274)
Constant	−0.267***	−0.256***
	(3.098)	(3.127)
Observations	134	134
Sargan-test	0.21	0.13
Adjusted R^2	0.12	0.38

Robust t-statistics in parentheses, * significant at 10% level; ** significant at 5% level; *** significant at 1% level, Sargan-test : p-value reported, null hypothesis = validity of exclusion restriction.

efficient than OLS. However, the total number of countries is constrained by the availability of all indicators for the whole sample, which leads to a decrease in the total number of observations.

Table 7 reports the estimation results. It is organized as Table 3. Like in the latter, the overall quality of the fit differs highly across indicators (between 90% and 10%). Almost all the effects of total migration found in Table 3 disappear in Table 7. In contrast the effects of skilled migration remain. The coefficients of the lagged quality of institutions confirm the existence of a catch-up process and the coefficients of the lagged human capital confirm the importance of education in improving the quality of institutions. The coefficient of skilled emigration is significantly negative for "voice and accountability" and significantly positive for "regulatory quality". The coefficients of norm are positive and significant for "voice and accountability" and "regulatory quality"; lending support to the hypothesis of a transfer of norm from the host to the home country. Overall the results in Table 7 confirm our main previous findings. Skilled migration has an impact on the quality of home country's institutions. Such an impact is higher than the one of total migration. The impact is positive except in one case: "voice and

Table 7 The impact of migration on the change in institutions (1990–2000) SURE

	Voice and accountability	Government effectiveness	Regulatory quality
		Total migration	
l_{t-1}.	.084**	−0.055	−0.834***
	(2.189)	(1.486)	(88.297)
m_{t-1}.	.758	0.348	0.051***
	(1.259)	(0.392)	(6.210)
N_{t-1}.	607*	0.054	0.000
	(1.917)	(0.178)	(0.010)
H_{t-1}.	193	−0.043	0.098***
	(0.402)	(0.091)	(5.981)
Constant	−0.059	−0.036	0.119***
	(1.105)	(0.725)	(27.945)
Observations	178	178	178
Adjusted R^2	0.06	0.09	0.97
		Skilled migration	
l_{t-1}.	.081**	−0.041	−0.833***
	(2.232)	(1.216)	(87.685)
m_{t-1}.	.591**	−1.371	0.168***
	(2.267)	(1.050)	(6.017)
N_{t-1}.	563***	0.298**	0.013
	(3.167)	(2.217)	(0.275)
H_{t-1}.	180	−0.047	0.097***
	(0.382)	(0.101)	(5.864)
Constant	−0.052	−0.023	0.118***
	(0.984)	(0.487)	(27.680)
Observations	178	178	178
Adjusted R^2	0.08	0.09	0.97

Bootstrap t-statistics in absolute terms in parentheses.
* significant at 5% level; *** significant at 1% level.

accountability". In this case the direct effect of migration is negative but the indirect impact through the transfer of norm is still positive.

5.4 Developing countries

So far, we applied different estimation methods to Equation (1) to get the most consistent results but we used the sample including both developed and developing countries. Since the issues of institutions and transfer of norms are more sensitive for developing than for developed countries, in this section we examine the relevance of our findings to developing countries. Indeed, developing countries are characterized by two important and distinct features. First they suffer more from bad institutions and have the most important progress to make in that area. Second, Diasporas from developing countries are in general more important and more active, so that the expected feedback effect in terms of transfer of norms is potentially important.

To this end, we re-run the most consistent regressions identified in the previous sections on developing countries only. We keep, however, the distinction between total and skilled migration. Table 8 presents the results in a way similar to Table 3. When the 2SLS method is applied, we use the same instruments as before. We favor results from the SURE estimations for institutional dimensions that are not subject to endogeneity issues. The relevant tests show that they are still strong and valid. In term of comparison between skilled and total migration the results are broadly similar to the ones with the whole sample; especially in terms of the magnitude of the effect which is always higher with skilled migration. We focus on the skilled migration in what follows.

With "Voice and accountability", the coefficient of skilled emigration is significantly negative while the one of norms is significantly positive. Higher skilled emigration rate reduces the voicing capacity at home but allows transferring the quality of norms prevailing in the host country to the home country. In contrast, the coefficients of skilled emigration are significant and positive with "Regulatory quality" and "Control of corruption". Note that the latter was not significant with the whole sample. The corresponding coefficients of the norm are insignificant. This suggests that for the other institutional dimensions, the channel is different from the one prevailing for voice and accountability. For instance, the improvement of corruption might be due to the business relationships that migrants abroad have with their origin countries. With more trade and business relationships, there might be an implicit or explicit pressure from abroad to decrease the rate of corrupted activities in the origin country. Another direct channel might be through remittances and funding of parties. If migrants abroad favor efficient and non corrupted governments, they will be more likely to send money to individuals or organizations sharing their views and acting in favor of good governance. As a whole, the results suggest that the channels of influence from Diasporas on the evolution of institutions are heterogeneous across the types of institutions.

6. Conclusion

The present paper contributes to the literature on the impact of emigration on the origin country. It focuses on the impact on institutions. Using bilateral migration data from and to both developed and developing countries and four indicators of the quality of institutions ("Voice and accountability", "Government effectiveness", "Regulatory

Table 8 The impact of migration on the change in institutions (1990–2000) Developing countries

	Voice and accountability SURE	Government effectiveness SURE	Regulatory quality SURE	Control of corruption 2SLS
		Total migration		
l_{t-1}.	.092	0.011	−0.842***	−0.368***
	(1.788)*	(0.191)	(88.782)	(5.287)
m_{t-1}.	.876	−0.134	0.046***	1.482***
	(1.145)	(0.094)	(5.185)	(2.493)
N_{t-1}.	644*	0.181	−0.045	0.012
	(1.684)	(0.377)	(0.883)	(0.089)
H_{t-1}.	636	0.996	0.038	2.513***
	(0.807)	(1.476)	(1.475)	(2.862)
Constant	−0.082	−0.051	0.123***	−0.492
	(1.212)	(0.827)	(27.154)	(1.446)
Observations	138	138	138	102
Sargan-test	..	..	..	0.51
Adjusted R^2	0.05	0.05	0.99	0.28
		Skilled migration		
l_{t-1}.	.084*	0.014	−0.841***	−0.369***
	(1.688)	(0.260)	(88.649)	(5.341)
m_{t-1}.	.670*	−1.090	0.147***	3.787**
	(1.888)	(0.722)	(5.132)	(2.139)
N_{t-1}.	542***	0.234	−0.049	0.141
	(2.654)	(1.584)	(0.950)	(0.856)
H_{t-1}.	614	0.997	0.039	2.887***
	(0.788)	(1.481)	(1.510)	(3.171)
Constant	−0.070	−0.048	0.122***	−0.811*
	(1.043)	(0.809)	(27.055)	(1.868)
Observations	138	138	138	102
Sargan-test	..	..	..	0.52
Adjusted R^2	0.07	0.05	0.99	0.29

Robust t-statistics in parentheses, * significant at 10% level; ** significant at 5% level; *** significant at 1% level, F-test for testing for weak instruments (>10 means strong instruments); Sargan-test: p-value reported, null hypothesis = validity of exclusion restriction.

quality" and "Control of corruption"), the econometric analysis examines the impact on the change of the quality of institutions in the origin country. The paper addresses three specific questions: i) What is the impact of international emigration on the quality of institutions in the sending country? ii) Is the level of education of emigrants important for such an impact to take place? and iii) Is a change of the quality of institution in the home country depends on their quality in the host country?

Using the whole sample of developed and developing countries both as senders and receivers, we find evidence that total migration affects directly the change in institutions. The impact is positive for all indicators except "voice and accountability". In this case the effect of emigration is negative and significant suggesting that emigration reduces the voicing capacity at home which weakens pressures in favor institutional improvement. Similar results hold for skilled migration (positive impact for all indicators but "voice and

accountability") but its impact is much higher. Turning to the impact of the host country's institutions, we find evidence of positive and significant effects especially when skilled migration is considered. These results lend support to the hypothesis of transfer of norm from the host to the home country. All the above results are robust to estimation methods and sample coverage.

The issues of institutions and transfer of norms being potentially more sensitive for developing countries, we rerun our estimation on a sample with only developing countries as senders. The results are broadly similar to the ones with the whole sample. In term of comparison between skilled and total migration the effects are always higher with skilled migration. The effect of emigration on "voice and accountability" is negative while the effect of the norm is positive. The impacts of skilled emigration are positive with "Regulatory quality" and "Control of corruption" but the corresponding impacts of norms are non significant.

Overall, the responses to the three questions above are as follow. International emigration has an impact on the quality of institutions in the sending country but such an impact may be positive or negative. The level of education of emigrants is important because the impacts are higher with skilled than with total migration. Finally, the change of the quality of institution in the home country depends on their quality in the host country i.e. having its emigrants located in countries with better quality of institutions benefits the origin country.

Endnotes

[1] See (Plaza 2013) for a good summary of the various economic externalities generated by diasporas.

[2] See for instance (Rodrik et al. 2004).

[3] See among many others (Acemoglu and Robinson 2006) and (Barro 1996).

[4] Note, however, that Diasporas don't always have a positive role in the home country. It can, for instance, support dictators, fund civil wars or initiate coup

[5] Given the low values in terms of variability and given that our approach relies on cross-sectional analysis, the expected estimation results with these two variables are problematic. For these reasons, we decided not to report the results with these two indicators. These are however available upon request.

[6] Note that the use of 2SLS is equivalent here to Instrumental Variable estimation.

[7] The full results are available upon request.

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