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The International Migration of Doctors: Impacts and Political Implications

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If the international migration of doctors has been part of the "brain drain" debate, few studies have focused on the question in depth due to statistical data limitations. An innovative data source based on foreign-trained doctors over the period 1991 to 2004, made it possible to draw up an overview of the migration flow of doctors, to study its impact and draw economic policy implications.

The Asian countries record the highest emigration rates for doctors (India, the Philippines), followed by Canada and the United Kingdom with France in 25th position. In 2004, Sub-Saharan Africa recorded the lowest density of doctors in the world but a relatively high emigration rate at 19%. In 2004, 60% of foreign-trained doctors were located in the United States, the country receiving the highest number of doctors in the world, and 20% in the United Kingdom. Australia, Canada and Germany each receive 3%, Belgium 2% and France 1.34%.

What effect do these migrations have on the origin countries both from an economic point of view and in terms of health indicators? What lines of action or public policies can be envisaged in the face of emigration? What form of international cooperation can be envisaged in terms of health professionals' international mobility? What are the impacts on the receiving countries' in terms of health profession regulation policies?

One of the most essential resources in a health system is the human capital that constitutes it. These highly qualified health professionals, and in particular doctors, are subject to numerous qualitative and quantitative regulatory measures to insure the quality, equity and sustainability of health care delivery. In France, the health profession is regulated at both national and regional level by the number of medical students admitted to second year undergraduate studies, and by the number of places available in the

different medical specialities. After a long period during which the *numerus clausus* was regularly reduced, France has since reinvested in its health human resources since the number of students admitted to second year studies has more than doubled between 1998 and 2014, increasing the number of students from 3,500 in 1992 to 7,492¹ in 2014. The aim of massively increasing the number of doctors is that supply exceeds demand, as was the case in the 1970's, which enables doctors to establish themselves in areas with the

greatest needs. This essentially quantitative regulatory approach, completed by a series of incentive measures to attract doctors to priority areas (Bourgueil *et al.*, 2007) is confronted with two previously unencountered phenomena: on the one hand, advances in medical practices, with the feminisation of the health profession, has resulted in different choices and work-

¹ Source arrêté du 31 décembre 2013-JORF n° 0004 du 5 janvier 2014.

ing practices than those that prevailed over the previous thirty years and on the other, the continuing growth of globalisation has resulted in the free movement of health professionals. Consequently, the international migration of doctors has been a more or less explicit means of adjusting health human resources, notably in rich countries. Thus, in the years 2000, the proportion of foreign-trained doctors amounted to approximately 21% in Australia, 30% in the United Kingdom, 34% in New Zealand, 23% in Canada and 24% in the United States (Astor *et al.*, 2005; Forcier *et al.*, 2004). In 2000, it represented 421,746 individuals in the OECD countries, that is to say 18.2% of the total number of doctors (OECD, 2008). In France, the number of foreign-trained doctors, whether French or foreign-born, has increased progressively due to the constant need for health professionals in medically underserved areas or in specific specialities (Cnom, 2013), but also because it is also a way of bypassing the initial selection process for students having failed first year medical exams but wishing to enter into the profession (Insert).

Furthermore, countries subject to health worker emigration, in the majority developing countries, are often themselves confronted with public health issues such as the HIV-Aids epidemic, or more recently Ebola. These are countries participating in the Millennium Development Goals (MDG) to be met by 2015 which include a entire section devoted to health. A sufficient number of health professionals, which emigration trends have tended to reduce, is required in order to meet these goals. In 2006 the World Health

Organisation estimated the shortage of health professionals (doctors, nurses, midwives) at 4 million persons. 57 countries were identified of which 36 in Subsaharan Africa, one of the main suppliers of doctors (WHO, 2006). At international level, we thus observe an increasing gap between health care supply and demand generating a shortage of health professionals in certain regions.

This fact raises numerous questions regarding both the sending and receiving countries: what impact does the emigration of doctors have on health care supply? Has it contributed to the deterioration of population health in the home country? Has it not resulted in a shortage of health professionals? Does the inflow of foreign doctors improve the geographical distribution of health care services in the receiving country? What are the consequences of the free movement of doctors and the recognition of European qualifications on the mechanisms regulating health professions?

To date, few studies have analysed the mobility of health professionals in a global manner. One of the reasons frequently evoked is the lack of data. This article, based on a regularly updated database of doctor migrations from 1991 to 2004, provides some answers. The database is provided by medical associations and statistics institutes, and reports the number of foreign-trained doctors working in 18 countries, for the most part OECD countries, including France (Sources insert). This data source made it possible to draw up an overview of the migration flows of doctors throughout the world, to study its impacts and public policy implications.

I

Continuous increase in the number of doctors trained outside France

In France, the number of French or foreign doctors trained overseas is increasing continuously. In 2012, almost a quarter of newly registered doctors (24%) had a foreign diploma (Cnom, 2013). On January 1st 2013, the French National Medical Council (Conseil national de l'Ordre des médecins, Cnom) recorded 21,111 foreign-trained doctors, that is around 8% of doctors registered with the National Medical Council (Cnom, 2014). These doctors are either holders of European qualifications (47%), or qualified outside Europe (53%). Among European-trained doctors, 36% were trained in Rumania, 21% in Belgium, 11% in Italy and 10% in Germany; extra-European qualifications were in the majority obtained in Algeria (40%) followed by Syria (11%), Morocco (10%) and Tunisia (5%) (Cnom, 2013). Foreign-trained doctors, which includes French citizens, obtained their qualifications abroad (principally in Belgium and Rumania) so as to bypass the *numerus clausus*, the quota of students admitted after the first year of medical studies to regulate the number of practitioners. In France, only European qualifications grant doctors the full right to practice in France. Extra-European qualifications are subject to procedures authorising the holder the right to practice. Numerous practitioners having obtained their diplomas abroad are recruited in medically underserved areas or to compensate for the shortage of professionals in certain specialities

From where does one emigrate? In what proportions? Towards which countries?

The majority of doctors working overseas come from Asia and English-speaking countries

With no surprise, Asian countries send the highest number of doctors overseas (Graph 1). Indeed, with their high demographic growth, these countries provide

SOURCES

An original database being based on the place of training of the doctors

The database elaborated within the framework of Yasser Moullan's PhD thesis made it possible to measure the number of foreign-trained doctors registered in a given country from 1991-2004. Data collection was essentially carried out among medical associations in the 18 major destinations for migrating doctors. 87.5% of the database is composed of data founded on the country of training (Canada, Denmark, Finland, France, New Zealand, Norway, South Africa, the United Kingdom, the United States). However, for certain countries (Australia, Austria, Belgium, Germany, Ireland, Italy, Portugal, Sweden and Switzerland), this data was unavailable and only the doctor's citizenship or country of birth was provided. These data were corrected by the ratio of foreign-trained doctors against foreign-born doctors based on other statistical sources. These data represent 12.5% of our total database made up of 410,644 foreign-trained doctors working in 18 host countries in 2014. It was constructed with the financial support of the World Bank and the participation of Professor Frédéric Docquier from the Université catholique de Louvain and Professor Alok Bhargava from the University of Maryland. It is available on-line at the following address: <http://perso.uclouvain.be/frederic.docquier/oxlight.htm>

CONTEXT

This edition of Issues in Health Economics is based on a PhD thesis in economics supported by Yasser Moullan in 2011 at the Université de Paris 1-Panthéon Sorbonne (Moullan, 2012). It deals with the determinants, impacts and economic policy implications regarding the migration of doctors from the point of view of developing countries. The PhD thesis is available in book format from the *Atelier national de reproduction des thèses* (ANRT). (<http://www.diffusiontheses.fr/65314-these-de-moullan--yasser-.html>).

G1

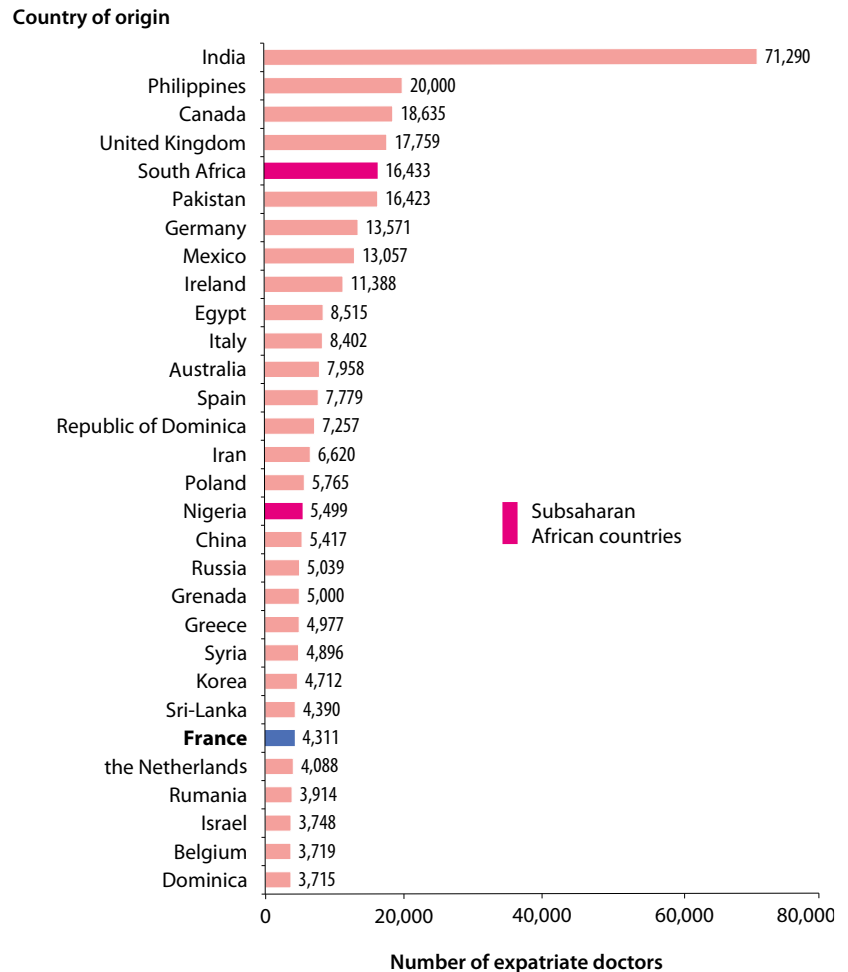
medical training opportunities proportional to their population size. In 2004, India recorded the highest number of doctors working overseas (71,290) followed by the Philippines (around 20,000 doctors). This trend follows a historical perspective. From the 1970's half the doctors in the world came from Asia whereas in the 1950's they principally came from Europe (Mejia, 1978). More surprising is to find Canada and the United Kingdom in third and fourth place with respectively 18,635 and 17,759 doctors working overseas. This can probably be explained by the fact that both are English-speaking countries which undoubtedly facilitates doctors' international mobility. France is in twenty fifth position with only 4,311 doctors qualified in France working abroad.

The Caribbean and Pacific Islands and Subsaharan Africa record the highest doctor emigration rates

If few Subsaharan African countries appear in this classification (in red on the graph), the study of doctor migration rate, (number of emigrating doctors matched with the number trained in the country of origin) reveals a new distribution (Graph 2). Among the 30 countries with the highest rates of emigration among doctors, two regions stand out: the small Caribbean and Pacific islands and Subsaharan Africa. In Dominica and Grenada, the emigration rate is close to 99%, 83% in St Lucia, and 62% in Saint Kitts and Nevis. Another island, Ireland records an emigration rate of 54%. High emigration rates in these regions can be explained by the size of insular economies in general and their limited absorptive capacities, the fact that English is the official language in these countries, and that they are geographically close either to the United States or Europe, the major recruitment zones for doctors. They thus adapt their medical training programmes to answer both the needs of their internal market and those of neighbouring countries.

By comparing emigration rates with the density of doctors in origin countries, we found that Subsaharan Africa had an average emigration rate of 19% in 2004 but that it also had the lowest density of doctors in the world (Bhargava and Docquier, 2007). The emigration of doctors in the context of an epidemic, such as the propagation of the

The 30 countries exporting the highest number of doctors in the world in 2004



Source: Database Bhargava, Docquier and Moullan (2011), worked out starting from a collection of data coming from the studied countries (*cf.* Sources insert).

Realisation: IRDES.

[Download the Excel® file on the IRDES web site.](#)

HIV-Aids virus between 1991 and 2004, is likely to have played a significant role in the deterioration of country's medical and sanitary conditions, which in turn incited other doctors to emigrate (Bhargava and Docquier, 2008). This suggests that, other than the lower wage level, working conditions also play a determining role in the decision to emigrate (Vujcic *et al.* 2004).

In 2004, the emigration rate for doctors in France was 2%, which is relatively low. This rate can be explained mainly by the fact that it counts a high number of practicing doctors, estimated at 200,000 in 2004. France exports doctors to neighbouring countries such as Belgium (1,377 doctors), Germany (252), Italy (221), Switzerland (122) and the United Kingdom (447). These countries represented over half the French emigration rate in 2004. Canada, because of its cultural and linguistic sim-

ilarities, received 443 doctors and the United States 1,285 thus representing the second destination for French doctors working overseas.

80% of foreign-trained doctors work in the United States or the United Kingdom

Concerning the choice of destination, 60% of foreign-trained doctors were located in the United States in 2004, the country receiving the highest number of doctors in the world (Graph 3). In second place is the United Kingdom with 20% of foreign-trained doctors. Alone, these two countries receive 80% of foreign-trained doctors in the world. The importance of mastering the English language in medical studies remains an essential factor in international mobility. Australia, Canada and Germany each receive 3% and Belgium

2%. France receives a little over 1% of foreign-trained doctors, but this low figure represents the lower bound due to the fact that some foreign qualifications are not recognized in France and a certain number of foreign-trained doctors working in French hospitals have an interim status.

The impact of doctor migrations on the countries of origin: contrasted effects

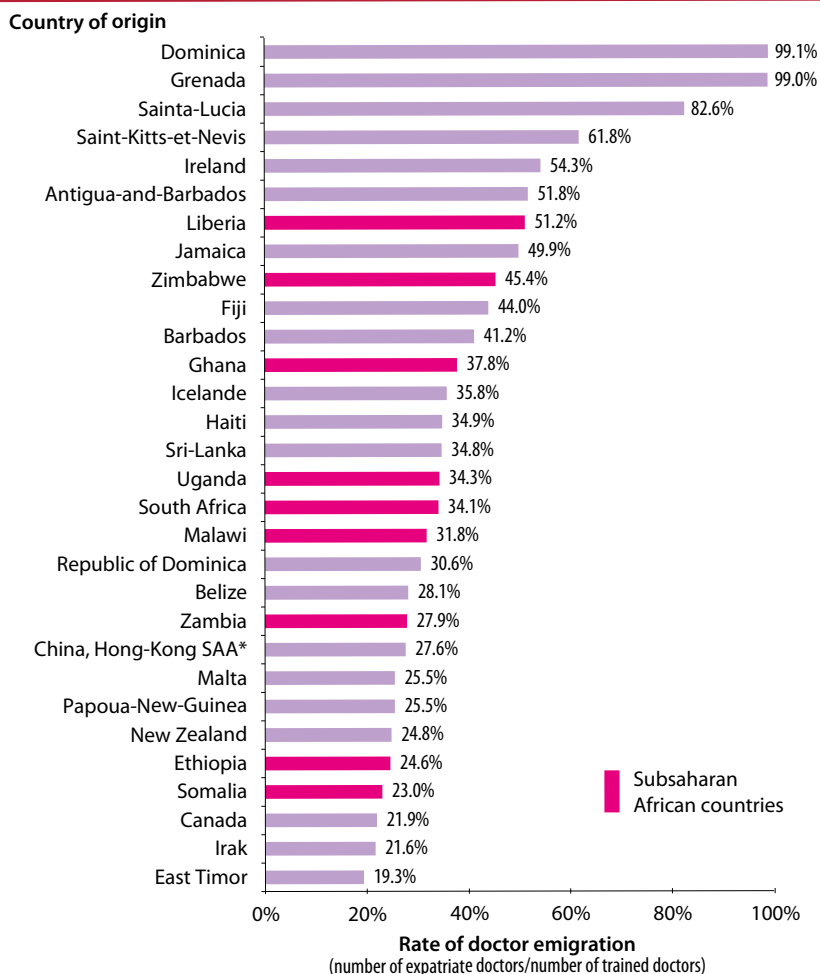
The emigration of doctors has limited and contrasted effects on the health of the population remaining in the home country

The emigration of doctors from developing countries to developed countries could be considered deleterious for the low income countries of departure. Indeed, we expected a decrease in the quality of health care delivered to the population remaining in the home country. However, empirical conclusions in the academic literature have not been able to determine that the emigration of doctors is responsible for the low medical density or the poor health conditions in Sub-Saharan Africa (Clemens, 2007). This author puts forward other factors such as medical training capacities, the poor distribution of health supply on the territory, the health environment and health system dysfunctions.

To provide a first answer to these questions, an econometric analysis was conducted so as to test whether the density and emigration of doctors in the country of departure had a significant effect on infant mortality on the one hand, and on the other whether it determined the delivery of specific health care, in this case vaccinations (Method insert). The results show that the density of doctors in the country of departure plays a significant role in the improvement of infant health outcomes. However, the emigration of doctors does not have a direct impact on infant mortality or vaccination rates (Bhargava, Docquier and Moullan, 2011). This result is explained by the low number of doctors that emigrate each year confirming the fact that emigration alone does not account for the low density of doctors in developing countries. Regulating the

G2

The 30 countries with the highest rates of doctor migration in the world in 2004



* SAA : Special administrative area.

Source: Database Bhargava, Docquier and Moullan (2011), worked out starting from a collection of data coming from the studied countries (cf. Sources insert).

Realisation: IRDES.

[Download the Excel® file on the IRDES web site.](#)

emigration of doctors would thus only have a weak impact on improving infant health. In the precise case of highly vulnerable populations such as children, other health professionals (nurses, midwives), preventive care and sanitary environment (availability of drinking water) play a leading role. Inversely, in complex epidemic situations (tuberculosis, HIV-Aids, Ebola...) in which the curative dimension (diagnosis and rapidity of care) is crucial, it is the doctor that plays the key role (Bhargava and Docquier, 2008, for the case of HIV-Aids).

If human health resources is an essential part of any health system, its efficiency must be part of a general public health policy simultaneously encompassing the improvement of working conditions, the modernisation of medical infrastructures and equipment, and a quality health environment.

The emigration of doctors also has beneficial effects on the countries of origin

Economic literature has for a long time been interested in the impact of the migration of highly skilled persons on the economic development of the countries of origin. In the traditional approach, the emigration of highly skilled workers was considered as a net loss for the country of origin, both in terms of public finances and the potential for development. This resulted in a proposal to introduce an emigration tax to compensate for the losses in the country of departure (Bhagwati and Dellafar, 1973). More recently, however, a new approach to migration has emerged which underlines its potentially beneficial effect on the countries of origin. Three explanations are put forward: first, migration can act as an incentive to edu-

education for the populations remaining in the home country; secondly, remittances sent from abroad by migrants can be fairly high, and finally, the return of migrants to their country of origin after a certain time spent abroad can be beneficial in terms of knowledge and skills sharing.

In the case of doctors, the role of emigration in influencing the education of stayers has been focused on gaining medical training to become a doctor. According to this new literature, the emigration of a doctor would act as an incentive to others to enroll in medical studies to become doctors in the future. The results of our study show that emigration, as an incentive for future generations to become doctors, has a positive and significant effect but of weak magnitude (Bhargava, Docquier and Moullan, 2011). In other terms, the number of doctors that migrate is never totally compensated for by the number of persons incited to become doctors.

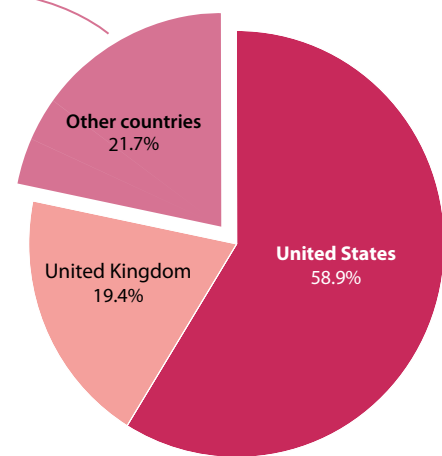
International migration is more and more associated with the amount of remittances sent home by migrants. According to World Bank data, the remittances represented 325 billion dollars in 2010 for developing countries (World Bank, 2011), three times more than public aid for development and almost as much as foreign direct investments. These considerable economic benefits have encouraged certain countries like the Philippines to consider migration as a real development strategy. In the precise case of the Philippines, highly specialised medical sector migrations (nurses, doctors) were favoured in the years 1980-1990. Numerous studies have measured the amounts of remittances sent home by migrants but have rarely focused specifically on the remittances sent home by foreign doctors. A study conducted in 2002 among foreign-doctors working in the United Kingdom (Kangasniemi *et al.*, 2007) revealed that on average, the doctors interviewed sent 16% of their income back to their country of origin. This figure reached 22% among doctors from low income countries.

The return of migrants to their country of origin, after a period abroad, is another reason put forward to justify the positive benefits of migration for the country of departure. In the case of qualified migrants returning to their country of ori-

G3

Destination countries for foreign doctors in 2004

Canada	3.5%
Australia	3.3%
Germany	2.7%
Belgium	1.8%
Sweden	1.4%
New Zealand	1.4%
France	1.3%
South Africa	1.2%
Norway	1.1%
Ireland	1.1%
Italy	1.0%
Switzerland	0.5%
Portugal	0.5%
Finland	0.4%
Denmark	0.3%
Austria	0.2%



Source: Database Bhargava, Docquier and Moullan (2011), worked out starting from a collection of data coming from the studied countries (cf. Sources insert).

Realisation: IRDES.

[Download the Excel® file on the IRDES web site.](#)

gin, the exchange of skills acquired abroad can be considered as an important contribution to the country of origin in terms of innovation but also regarding the transmission of social norms. The study conducted by Kangasniemi *et al.* (2007) provides evidence of this since 50% of doctors from low income countries reported their intention to return to their country of origin. The main reason invoked was family ties. However, those who had no intention of returning justified their decisions by invoking the poor working conditions in their country of origin².

Lines of action and public policies in the countries of departure

Taking into account all financial and non-financial incentives

Governments have often pointed out doctors' low salaries in the countries of departure. However, even if financial incentives will always remain an essential tool in keeping medical personnel motivated and productive, they are nevertheless fairly limited in the case of international migrations (Vujicic *et al.*, 2004). In developing countries, an increase in doctors' salaries is necessary but will never reach the wages in developed countries. On the other hand, the desire to obtain medical training abroad and acquire experience, and the

deterioration of working conditions, are regularly put forward to explain the reasons for emigration (Awases *et al.*, 2004; Kangasniemi *et al.*, 2007). Among the non-financial measures that play a significant role in the decision to remain in the country of origin are life-long professional training policies, career enhancement and professional advancement policies, and improved working conditions.

Adapting training capacities

In order to deal with emigration, and sometimes the shortage of doctors, certain developing countries have chosen to increase their medical training capacities. If this policy allows rapidly replacing the departure of certain practitioners, it nevertheless poses a problem regarding the country's absorptive capacity and the cost of implementing such a policy. If increasing medical training capacity is not accompanied by prospects for recruitment, an unemployment situation is possible, notably in a period of budgetary pressure which acts as an additional incentive to emigrate, as currently illustrated by Greece (Kentikelenis and Papanicolas, 2012). Furthermore, increasing training capacities raises the question of the return of policy's investment knowing that a proportion of trained students will work abroad. According to certain estimations, it would appear that since 1951, India has lost 5 bil-

² <http://cep.lse.ac.uk/pubs/download/dp0618.pdf>.

lion dollars in training doctors who have then left to work abroad (Martineau *et al.*, 2004). The proposed tax on the migration of highly skilled personnel was aimed at compensating for this budgetary loss (Bhagwati and Dellafar, 1973).

What form of international cooperation regarding the international mobility of health professionals?

Limit recruitment abroad or free movement?

The first solution put forward to deal with the shortage of doctors in developing countries was to limit the recruitment of doctors from these areas. In 2003, the Commonwealth States, under the auspices of the United Kingdom, adopted a code of good practices aimed at limiting the recruitment of health professionals from countries themselves suffering from shortages, and coming from Africa. A similar but non-binding code was adopted by WHO member States in 2010 so as to "attenuate the negative effects of health personnel migrations on developing countries' health systems"³. The adoption of these codes of conduct was rapidly hampered by doctors' invoking article 13.2 of the Universal Declaration of Human Rights and the Citizen guaranteeing "the right to leave any country, including his own, and to return to his country" and therefore the right to remain internationally mobile. In this respect, it is no longer a case of depriving developing countries of their doctors

but rather receiving doctors freely deciding to leave their countries of origin (Clemens, 2009). This argument was strengthened in Africa with the case of doctors wishing to leave their country due to the high risk of HIV-Aids transmission during the epidemic. This debate also questions the pertinence of policies aimed at regulating migration in a context of growing globalisation in which the political dimension is constantly challenged by peoples' aspirations of a better life *via* emigration.

Development aid can reduce the migration of doctors, but in small proportions

Acting on the drivers that encourage migration, or on the contrary those that retain doctors in their own countries, can be a more useful solution than direct restrictions on health professionals' mobility. One of the most frequently mentioned tools is development aid (*via* codevelopment policies) granted by OECD countries to the health sector. In developing countries, a health policy based on human resources can therefore be implemented *via* financial compensation mechanisms granted by developed countries. This aid can reduce the migration flow of doctors by favouring the creation of medical infrastructures and the improvement of doctors' working conditions *via* the provision of pharmaceutical drugs and equipment. Finally, through the provision of technical assistance granted to developing countries (*i.e.* donor countries send health professionals to developing countries), health aid can lead to an improvement in health systems by the transfer of skills and the exchange of good practices. In this context,

what is then the link between development aid in the health sector and migration?

The results of our estimations (Method insert) show that health aid can effectively reduce the migration of doctors but in limited proportions and only in the short term.

Our estimations thus show that within a three year period, doubling health aid leads to a 5% reduction in doctor migration growth rates. Development aid appears to be a limited tool in controlling migration. In order to interpret the channel by which this effect transits, the analysis distinguished technical assistance (in other words the flow of medical expertise) from financial flows. Technical assistance (*via* the transfer of skills from donor countries to developing countries) appears more efficient than financial aid (doubling technical assistance reduces doctor migrations by 7% whereas it is only reduced by 4.6% for financial aid). One possible explanation is that financial aid could be fungible, that is to say it can be used to substitute part of receiving countries' Ministry of Health budgets, thus, monetary aid does not necessarily lead to additional investments in the health sector. Furthermore, the dissolution of this financial assistance *via* the State's administrative services leads to a reduced proportion of the funds that are actually distributed.

* * *

The migration of health professionals, and notably doctors, is a growing worldwide phenomenon, especially in Europe since the inter-European recognition of qualifications was implemented in 2007.

To confirm these results, it would be necessary to update available data and analyse over the last ten years, taking into account the effects of population ageing, budget restriction policies, the enlargement of the European Union to 28 countries, the adoption of codes of conduct and the health insurance system reforms implemented in the United States which will result in a high demand for health professionals.

However, the study reveals several points that could be useful to the regulation of

³ http://www.who.int/hrh/migration/code/code_fr.pdf

METHOD

The database thus collected provides information both on the country of training and the country of destination over a relatively long period spanning from 1991 to 2004. The database was enriched with data from the World Bank *World Development Indicator* so as to obtain information on the health indicators in doctors' countries of departure. The mortality rate for infants aged under one year and under 5 years old, and the rate of child vaccination against diphtheria, pertussis and tetanus were introduced as dependent variables. By adopting random and fixed effect dynamic models, it was possible to measure the effect of doctor emigration on health indicator levels in the countries of departure three years after departure. To measure the effect of development aid, we used data from the OCDE-DAC-CRS database so as to analyse the impact of health sector aid flow (calculated on the basis of a prior three years average) toward developing countries on the emigration of doctors from these countries. Here, models issued from the Generalised Method of Moments (GMM) were used. All the econometric models used take advantage of the time dimension to estimate causalities between variables through the introduction of lagged variables as an instrument and by controlling for the characteristics of each country. The inclusion of time lag for the dependent variable allowed calculating growth by taking initial levels into account. Both short-term and long-term effects were deduced.

health professionals in France and within a broader context. The international migration of doctors should not be considered solely as a brain drain but on the contrary as a real development strategy for the countries of origin.

Financial benefits in terms of financial flows, the return of migrants, knowledge-sharing *via* diasporas are all mechanisms suggesting that the benefits of migration are more important than previously imagined. Furthermore, the efficiency of public policies aimed at limiting migration flows in a context of the globalisation of goods, services and workforces, has been called into question by the will of individuals and more especially doctors, to retain their right to migrate.

Incentive measures in countries of emigration should thus be a policy focus. Among incentive policies aimed at maintaining health human resources, strictly financial mechanisms such as salary increases and career advancements are necessary but not sufficient. Their effectiveness lies in their combination with other non-financial incentives such as improvements in working conditions and the health environment, transparency in the recruitment process, or again the possibility of lifelong professional training.

In this respect, sharing medical expertise through international cooperation networks appears more efficient than financial aid alone. This has also been the observation of studies analysing policies

regulating the number and distribution of health professionals in developed countries (Bourgueil *et al.*, 2006).

Finally, the free movement of doctors throughout the world, and notably Europe, calls into question the efficiency of regulatory processes at the beginning of training such as the *numerus clausus* in France. In the same way as other sectors of activity, health or at least health human resources policy, beyond the recognition of diplomas, should now be apprehended at European level where very diverse regulation measures prior or during the training, and on the installation of physicians, are at work (Bourgueil *et al.*, 2002). ♦

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