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## **Brain Drain – Brain Gain: Intellectual Discourse or Discord?**

Brain drain is the large-scale and systematic transboundary movement of trained and skilled professionals of a country. Reverse transfer of technology is the emigration of scientists from developing countries to rich economies (GIANNOCOLO 2004). This problem has been acknowledged as a factor contributing to the burgeoning problem of poverty in the world.

This dichotomy of rich and poor provides an insight into the reality of the exodus of individuals. It results in a dynamic movement we call migration. Movement of peoples has been part of the history of humankind. With the advent of knowledge-based economic development, the search for highly skilled professionals is imperative. Rich countries are in need for more scientists to fuel their economies. With science just opening up its frontiers, the necessity for scientific workers has never been the same. This scientific diaspora is the discussion of this paper, which will look at the current issues on brain drain, its determinants, who benefits from it and possible ways of limiting the problem. This paper reviewed a number of key scientific writings to answer these queries.

### **PROSOPOPEIA OF BRAIN DRAIN**

Is brain-drain a problem or just part of a dynamic world? In the last decade emigration of skilled labor from developing countries has accelerated (STRAUBHAAR 2000). A stock of studies have been conducted in this field (GIANNOCOLO 2004). It becomes a mine of information that any researcher will grapple with. Let us start with the most simple personification of brain drain.

Africa is devastated by the maladies of poverty and AIDS. Yet it is a continent which lost 60,000 doctors between 1985 and 1990 (UNECA 2000). 23,000 academic professionals emigrate annually (PANG et al. 2002). Among its medical schools, a third to a half of its graduates emigrate to richer countries. There are 18,000 Zimbabwean nurses working abroad. In Kenya, only 600 doctors are working in the public sector out of the 5000 registered. A large percentage have moved. In Addis Ababa University, nobody returned from among the twenty Physics faculty members sent to study PhD overseas.

India has the highest number of exported doctors followed by the Philippines. Among nurses, the Philippines comes first with 150,000 working in western countries. Of the 232,000 Chinese who left to study overseas until 1997, only 32% returned. In the receiving countries, figures are more interesting. There are 21,000 Nigerian doctors practicing in the US. In the UK, 31% of doctors and 13% of nurses are born overseas. Just in London alone, 23% of the doctors and 47% of the nurses are foreign-born (PANG et al. 2002).

The migration of skilled individuals is considered costly for the sending country due to loss of investments in education, high fiscal costs and labor market distortions (COMMANDER et al. 2003). For example, its 600 medical graduates working in New Zealand cost \$37 million to South Africa. According to the UN, every migrating African professional represents a loss of \$184,000 to Africa, while the continent spends \$4 billion a year to hire 100,000 foreign experts (UNECA 2000). This situation does not seem to fit to any development framework, especially for countries in the infancy of development.

## **MOVING SKILLED WORKER**

Weekly papers in developing countries abound with recruitment ads in search for engineers, nurses, teachers and computer experts to name a few. Minimum requirement to get these jobs is a college degree. A shift in migration patterns from blue to white-collar workers was seen in the past decade. In the US in 1999, only 500,000 out of 7 million immigrants have no more than a primary education. This shows that most migrants are relatively well-qualified (MOUNTFORD 1997). This has also been echoed in other studies showing that migrants are usually educated, in their early productive years and are single (MAHROUM 2000).

In the developing world, higher education is hard-earned. College graduates usually belong to societal levels way above the cut-off of poverty. This is the same class where access to media and information about the world of migration is easy, thus fueling their desire to move. Students who aspire for post-graduate education overseas are in the same economic level. These individuals have the capability of paying travel expenses, have relatives abroad, and have the educational qualifications to pass the rigorous requirements of countries.

## **DIALECTICS OF SCIENTIFIC DIASPORA**

There are many reasons for migrating. Sometimes these factors are categorized as 'push' and 'pull' factors. Key reasons for flight are: poor remuneration, bad working conditions, oppressive political climate, persecution of intellectuals, and discrimination. Among the scientists, lack of funding, poor facilities, limited career structures, and poor intellectual stimulation are cited as reasons for dissatisfaction. On the contrary, the pull factors are higher wages and income, high standard of living, political stability, better working conditions, career opportunities, professional development, substantial research funds, advanced technology, modern facilities, experienced support staff, modern educational system, prestige of 'foreign training', meritocracy, transparency and intellectual freedom (UNECA 2000, PANG et al. 2002).

Many theories explain the phenomenon of migration. One encompassing theme is economy (ADAMS 2003). Any person makes a rational decision by weighing the cost and the benefit of moving. When the benefit, which is measured in economic terms, is perceived to outweigh the cost, the decision to move becomes apparent. The New Growth Theory, which argues that human capital produces positive knowledge

externalities that spill over is one framework. This becomes one antecedent of the quick growth of countries with high levels of human investment. This results into the 'core-periphery' divide, whereby the highly skilled gravitates towards the dynamic and highly developed 'core' regions from the underdeveloped peripheries (UNECA 2000).

Colonial mentality is a pervasive reason for moving. Among intellectuals in search for higher education and training, western countries are perceived to be the best places. This consciousness translates into realities where western graduates are revered and emulated, providing role models for others. Foreigners are ubiquitous in western research institutions. In the Netherlands, PhD researchers in the various fields of sciences come from other countries such as East Asia and Eastern Europe. Most of these students eventually end up having postdoc and permanent positions in OECD countries because of better salaries than in their home countries (KELO – WACHTER 2004). In Japan, the number of postdocs rose from 537 in 1996 to 1225 in 2000 (MAHROUM 2000).

## **INTELLECTUAL PIRACY**

The world has always been hounded by the issue of intellectual piracy, which hinders an environment conducive for creativity. Is brain drain a form of intellectual piracy? The flight of intellects from one university to another is a microcosm of brain drain. This is sadly practiced even by the world's top universities, which aggressively recruit intellectuals (CHU 2004). Any university which has resources can easily pirate any scientist. Excellent scientists equate to more research funds, more students and substantial contracts and consultancies. This practice is justified by the idea that a bright mind is more productive in institutions with more resources. Among the Nobel Prize winners, a number are born in countries other than where they received the award. Physics laureates like Daniel Tsui, Tsung-Dao Lee, Steven Chu, Claude Tannoudji, Georges Charpak are a few examples. They come from countries where researchers are badly needed. This provides a proof that even among the intellectual elites brain movement is inevitable.

## **BRAIN WASTE**

This is the worst concept in this rhetoric, whereby a highly skilled worker migrates and gets employed below the educational level attained (COMMANDER et al. 2003). An example is a medical doctor who works as a nursing aide in another country. This results into a waste of the skill. Neither the source nor the receiving country benefits. Many overseas workers are university graduates who work as domestic helpers or scientific professionals doing menial jobs. This is a mismatch of the skill of the worker and the demand of the market (MOUNTFORD 1997). The investment in education of the origin countries does not result into profit. Their brains are literally wasted. This is not considered as brain gain either.

## **ANTITHESIS**

Some views assert that human capital flight does not result into a poverty trap for countries (MOUNTFORD 1997). Remittances, skills of potential returnees, transferred technology, free knowledge, and products of science benefit the source countries. The Philippines, which has 8 million migrant workers, received \$8.5 billion in 2004, which kept the economy afloat. World Bank estimates that total remittances of the world's migrant workers in 1978 amounted to \$75 billion (ADAMS 2003). This figure did not include money sent through informal channels and those sent as goods. Western discoveries like medicines have drastically decreased tropical diseases in the developing world.

Migration to a higher wage country raises the return to education by increasing human capital formation in the source country. There is also endogenous formation of 'education classes' (STRAUBHAAR 2000). In the realm of human rights, movement of intellectuals alludes to 'free flow of people, ideas and information' and the 'right to movement of scientists'. Neo-classical economic theory disputes that movement of workers from low- to high-wage countries ensures a more efficient use of labor and narrows wage differences between countries (UNECA 2000). Unemployment is lowered, wages are raised, economic growth and household welfare are boosted. This decline in unemployment was seen in Pakistan, South Korea and Sri Lanka (MOUNTFORD 1997).

Scientists who have no access to good laboratories are unable to maximize their talents, and are unable to contribute to the scientific community. This is the mismatch between training and job opportunities in the developing countries. Migration allows the reduction of excess supply of skilled workers. These unused or underutilized human resources will be optimized by reallocation. There are more products per capita if scientists are in good research institutions than if they are in a resource-deplete environment (CHU 2004). Moreover, when the needed international experts come from western countries, 'brain exchange' transpires.

The transfer of technology by scientists back to their country provides economic impact by bringing back knowledge, as seen among Indian expatriates who worked in the Silicon Valley (MOUNTFORD 1997). They spearheaded the booming IT industry of India. Even the concept of academe-private partnership like that of the Indian Institute of Technology and the business community is an imported model that is successful. Enterprising migrants who saw the opportunity planted similar seeds in their own backyard. On the contrary, sceptics argue that these are simply smart moves which take advantage of cheap labor, and not necessarily a transfer of technology. Even the concept of 'outsourcing' (led by local 'returnees') is not considered a development approach, since this is purely economic saving for the company by using cheap labor.

## **COOPERATION OR COMPETITION?**

Are the dynamics in the system adhering to principles of intellectual discourse and cooperation, or promoting intellectual discord? There are contentions that brain gain is a shift in paradigm moving away from cooperation and development towards competition (COMMANDER et al. 2003). In the development of human resources, rich countries have

been providing aid in the form of scholarships to developing countries. Fulbright of the US, the British Council of the UK, NUFFIC of the Netherlands, DAAD of Germany, JSPS of Japan and lately Erasmus Mundus of the EU are familiar organizations to many scholars (KELO – WACHTER 2004).

Similarly, the same western countries are actively encouraging their universities to accept third country students, offer more international courses, lower tuition fees, or participate in the flourishing offshore education fairs (KELO – WACHTER 2004). Some studies consider these as instruments of poaching. These have come into fruition through the apparent increase of foreigners enrolled in Europe and the US. In the UK, 35% of all students studying within the 19 Russell Group universities are from outside the EU. The increase in foreign students help in continuing research programs by allowing a continuous flow of potential scientific workers.

The US gains most in the movement of brains, since they receive the highest number of foreign students and educated workers. The easy access to TOEFL, GRE and foreign nursing and medical graduate examinations are proactive methods of recruitment. In 1998, the US Congress approved a bill increasing the number of visas for foreign nationals working in information technology by 50,000 annually (CHU 2004).

In an EU conference in September 2004 in The Hague, aptly entitled 'Brain Gain – the Instruments', participants discussed developing ways to gain 700,000 additional researchers by 2010. Its final conference document states that – 'in the context of a growing global competition for highly skilled staff, Europe should attract (young) research talents from all over the world. In addition to offering an excellent research environment, obstacles to entry and mobility within the EU should be removed' (KELO – WACHTER 2004). This statement acknowledges a tight competition, and undermines the gains of developmental discourses on brain drain.

We see three trends in this debate – the unmet high demand for researchers in the scientific market, the competition resulting from it (primarily between the US and Europe) and the migration of European and third country scientists to the US. On January 11, 2004, Time Magazine bannered an article – 'How to Plug Europe's Brain Drain'. It stated that all over the US, research facilities are teeming with bright, young Europeans, lured by America's generous funding, better facilities and meritocratic culture (CHU 2004). It's not surprising if US spent \$348 billion for research, which is \$147 billion more than the EU spending. This resulted in 78% more high-tech patents per capita than in Europe. There are 400,000 European science and technology graduates living in the US. Because of EU talents moving to the US, the solution is to get EU's scientific workers from third countries (KELO – WACHTER 2004).

In the competition for human capital, countries try to attract the highly skilled by showing openness to innovation, strong links between research and industry, openness to foreigners, a flexible system and low taxes among others (MAHROUM 2000). Developed economies have actively and openly used a range of incentives and institutional mechanisms for attracting skilled labor. The use of temporary skilled migrant visas by countries has been striking. Now EU has established its 'mobility centers' to assist third country scientists (KELO – WACHTER 2004).

## **LOOKING AHEAD AND MEETING THE NEEDS**

There is no doubt that the whole world benefits from a knowledge-based global society. The fruits of scientific work trickle even to the fringes of the world. Take for example the smallpox vaccine, which eradicated a debilitating disease. Polio might be the next candidate for global elimination. Mobile phones are ubiquitous. Soon the whole world will be interconnected by the Internet. But are the gains enough and equal?

It has to be admitted too that there are disparities in the gains – some countries getting richer and some getting poorer. This is the divide which has to be addressed. In the search for global peace, the eradication of poverty and upholding equality and equity are essential. If Africa needs one million scientists to meet its development objectives, then let the world not deprive them. How can they achieve their goals if they only have 20,000 scientists at the moment?

Destination economies have to admit their failure to develop their own human resources and meet their local job needs. Their problem should not be answered by fledgling poor economies. This proves the lack of insight among its policymakers and the inability of the educational system to address their labor markets. Transforming educational systems will help in the reallocation of skills. There is enough population to sustain economies and to distribute jobs. The levels of unemployment and underemployment of countries are indicators of potential human resource maldistributed due to inappropriate skills in discord with market needs.

Within regions such as the EU, enlargement will allow movement of skilled workers specially from Eastern Europe. Regionalizing countries may be a solution. This will allow free flow of skilled workers to meet the demand where needed. This will also help in answering different population structures which have an effect on the labor market. The world has to rethink globalization – either towards movement of workers or movement of work. ‘Outsourcing’ is a staple of international business nowadays. This may be one answer to capital flight. Africa can make use of its people to act as development consultants instead of sending and paying hundreds of thousands of international experts.

To achieve the UN’s Millenium Development Goals, a good global framework in the migration of skilled workers, intellectuals and scientists should be developed. This framework should carry the basic tenets of freedom of movement and human rights. It should also be able to balance between the rights of poor countries to survival through the skills of its population and the rights of its citizens to move freely. While the rest of the rich countries are experiencing the leaps and bounds of knowledge-based economies, a big percentage of people on earth still have to catch up. If there is no good framework, the vacuum resulting from this globalization of the intellect and the knowledge-divide between the rich and poor will get wider. If no proper discourse transpires, discord will remain. The need to address this global issue is imperative.

## **CONCLUSION**

Brain drain and brain gain are realities the world has been facing and will continue to experience. The stiff competition for scientific workers needed by western countries to fuel their knowledge-based economies will remain unabated. The US and Europe will

remain the major contenders in this fight, with the former gaining ground. Developing countries will remain a major source of skilled workers both in the scientific field and the service areas. Despite the benefits, source economies will continue to experience the wrath of brain drain, which has more deleterious effects in the long run. There are more losses than gains in this dialectics. Gains are just trickles. World policy makers and scientists should acknowledge this problem, and think beyond the confines of their laboratories. World leaders should come up with a good framework of cooperation whereby mobility of scientific workers is relaxed, and the whole world gaining. This is the only way to achieve intellectual discourse and veer away from intellectual discord.

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