

Who is Afraid of the Brain Drain? A Development Economist's View*

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Summary

In “Debating Brain Drain”, Brock and Blake (2015) discuss the pros and cons of high-skill mobility prevention to curb the brain drain from developing countries from a legal and political perspective. I complement this discussion with the insights from recent economic research on brain drain, globalization and development. Two main results are emphasized: the fact that educational investments are higher when high-skill migration is not constrained, and the role of skilled diasporas in promoting the integration of migrants' home countries into the global economy. Both results strengthen the rationale for letting skilled people go.

* This essay is forthcoming in *Law, Ethics and Philosophy* (LEAP). It largely draws on joint work with Frederic Docquier (Docquier and Rapoport, 2012a, 2012b). See also Gibson and McKenzie (2011) for an overview of the brain drain literature.



1 Introduction

Gillian Brock and Michael Blake's (2015) book "Debating Brain Drain: May Governments Restrict Emigration?" discusses and offers a new perspective on an idea put forth in liberal political theory and international human rights law, namely that emigration is a fundamental human right and shall therefore not be questioned. The book is split into two parts arguing for and against the possibility for developing countries to impose restrictions on emigration to remedy their losses incurred through the "brain drain" (that is, the emigration of highly-skilled workers). Brock argues that the governments of developing countries may impose temporary restrictions on emigration when they experience net losses from the departure of their skilled workers whereas Blake argues against such restrictions. Both authors agree that "that despite a huge range of benefits that accrue to countries of origin, there are some cases in which net losses may be occurring" (p. 42).

While I will not disagree with the statement that some countries experience losses from high-skilled emigration, I disagree with Brock's policy conclusion of putting restrictive laws into place that discourage the emigration of the highly skilled. In what follows, I will argue that from an economic standpoint the notion of "brain drain" may not be the salient dimension of high-skill emigration. Once we consider the findings of the recent economic literature on the subject, the normative and positive arguments for restricting high-skill emigration largely collapse.

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well placed to reflect on his personal experience to write on the topic. His proposal, now known as the "Bhagwati tax" proposal, was at odds at the time with his otherwise very neo-classical views on free trade but well in the spirit of the New International Economic Order that was gaining momentum in the 1970s in many political, civil society and academic circles.

The very principle of a tax on brains rests on the notion that origin countries should be compensated for the loss of human capital incurred as a result of the brain drain. The compensators should be those who gain from the move, that is, the high-skill emigrant herself and the receiving country that will enjoy the return from that human capital, reaping the benefits from an investment financed by others. It is in

line with the more radical view that brain drain is a form of neo-colonialism whereby the economically advanced countries keep depriving developing countries of their resources, a modern form of spoliation. And human capital may well be the scarcest resource of all for developing countries, one that cannot be exported without seriously compromising their growth and development prospects. This negative and pessimistic view

of the brain drain (the term itself is quite pejorative) is well summarized in the following citation from Michael Todaro's popular development economics textbook, a must read for any undergraduate student in economic development studies:

"The irony of international migration today is that many of the people who migrate legally from poor to richer lands are the very ones that Third World countries can least afford to lose: the highly educated and skilled.

Since the great majority of these migrants move on a permanent basis, this perverse brain drain not only represents a loss of valuable human resources but could prove to be a serious constraint on the future economic progress of Third World nations" (Todaro, 1996: 119).

It is noteworthy that the above citation, taken from the 5th edition of the textbook, was still present in the 10th edition nearly 20 years later. This shows that the dominant view about brain drain and development has not evolved so much in spite of the fact that the last 20 years have seen a boom in economics research on brain drain and development which is much more balanced than the overwhelmingly negative literature of the 1970s and 1980s. Let me add that the economic case for or against the brain drain has important policy implications. To the same extent that the presumption of losses for the origin

2 Should we tax (or ban) the brain drain?

Forty years ago, the great international economist Jagdish Bhagwati proposed to institute a "tax on brains" to curb the brain drain from developing to economically advanced countries. Himself a member of the super highly-skilled Indian academic diaspora, a graduate from Cambridge University, Professor first at MIT and then at Columbia University, he was

countries served as background justification for policy proposals to curb the brain drain through, say, a Bhagwati tax in the 1970s, the same presumption serves as a justification today for limiting the free movement of highly skilled professionals originating from certain developing countries. These limits range from unilateral sanctions imposed by home-country governments on those who would fail to return early enough (such as removal of citizenship, imposing military conscription on returnees – or putting them in jail for deserting) to host countries forbidding the recruitment of highly-skilled professionals originating from certain countries. A famous example is the ban on recruitment of health professionals from a large number of African countries enacted by the British authorities in the mid-2000s.

■ 3 Freedom of movement for all but the highly-skilled?

There are many reasons to oppose restricting the free movement of people in general, and the fact that one is highly-skilled should not create an exception. Imposing restrictions on entry is widely accepted even though one's birthplace explains two-thirds to three-quarters of global inequality (that is, within-country inequality generated by differences in education, experience, gender, race, family background, etc., accounts for only one quarter to one-third of total inequality in the world, the rest being due to differences in income per capita across countries). It is difficult to reconcile this basic fact that international movements are heavily constrained with any notion of global justice. For one thing, if we were to decide on the rules governing international migration under a veil of ignorance, it seems obvious to me that we would opt, if not for open borders, at least for borders which would be much more open than we currently experience. We should also recall that 200 years ago, at the onset of the industrial revolution, the ratio of income per capita between the richest and the poorest country in the world was about 2 or 3. It is now orders of magnitude higher, closer to 100 (in Purchasing Power Parity!). This explosion of inequality between countries has been accompanied by the introduction of passports, visas and all kinds of restrictions on people's free movement, exactly at a time when the incentives to migrate became stronger.

Even if we abstract from considerations of global justice and tolerate that countries impose restrictions on immigration, it does not follow that they can impose restrictions on exit, that is, on emigration. Scholars from other disciplines would discuss better than I could the legal and normative foundations for the right to emigrate; and indeed, restrictions on emigration have only been imposed on a large scale in dictatorships and authoritarian regimes such as the former Communist countries of Europe, or, in the more recent past, in Cuba, China, Iran and

North Korea. It is not morally and legally equivalent to build a wall to prevent people from coming in or to prevent them from going out. And again, justifying such restrictions – or giving them a hand – because the people under consideration have valuable skills does not resist serious examination. States are not residual claimants of one's human capital. And what do we know about the personal motives and circumstances that lead people to emigrate? Should it make a difference if someone wants to emigrate because of wage differentials or out of fear of persecution in her home country? Should it make a difference if that person is a medical doctor from Ethiopia, an engineer from Bolivia or a nurse from the Philippines?

While I believe that the policy debate should take seriously the rights of individual migrants rather than focusing exclusively on the losses to origin countries (that is, the debate should also be a principled one), I note that the losses for the origin countries still serve as underlying justification for restrictive policies. In the rest of this article, therefore, I focus on that particular aspect of the debate. The line of argument I want to propose is the following: the brain drain is not necessarily a curse for developing countries but could be an opportunity. The presumption among the general public and among policymakers may still be that the brain drain is bad, but the evidence is that it is not. Let's see why.

■ 4 There is more than meets the eye: brain drain and human capital formation in developing countries

The traditional (and still widely shared) view of the brain drain is that it is depriving home countries of part of their human capital, which is essential for growth. To discuss this idea let me use the metaphor of a cake (the country's stock of human capital), with the brain drain being equivalent to cutting a piece of the cake (say a quarter) and sending it abroad – hence the loss. This view in terms of sheer loss neglects two things. First, those abroad form a diaspora which can keep interacting with the home country in many economically useful ways. I will discuss diaspora links in the next section. And second, it fails to ask how the cake was made. The truth, however, is that the size of the initial cake, the one from which the piece is taken, is bigger when there are more emigration options. Or, in economists' jargon, the stock of human capital is endogenous to migration. The brain drain may well consist in cutting a piece of the human capital pie, however the pie is bigger than the one that would exist if there was no brain drain.

Overall, it is not obvious which effect dominates: the incentive effect (increase in the size of the cake due to the existence of emigration options – let's call this the brain effect), or the exit effect (decrease due to emigration – let's call this the drain effect). Under certain conditions that have been well specified

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theoretically and verified empirically in a wide range of studies, the brain drain could in fact result in a brain gain.

The theoretical intuition for this result is best explained through simple numerical examples.¹ Assume the following data: individuals in a developing country can either be “skilled” (if they invest in a certain education program) or unskilled (if they don’t). The wage for an unskilled worker is, say, 1,000, and for a skilled worker 5,000. Based on the costs of acquiring education (which includes forgone wages during the first period, the direct costs of schooling, etc.), a certain number of people, say 10 percent of the population, make that investment. Now assume that for skilled workers only, there is a certain probability, say 20 percent, of emigration to a high-wage destination where skilled workers can obtain a wage of 30,000. The expected wage for a high-skill worker is now equal to 80 percent of the domestic wage plus 20 percent of the foreign wage, that is to 10,000. In other words, it is now doubled thanks to the opportunity of emigration. Based on this, we can expect that some people will invest in education who would otherwise not have done so without the possibility of enjoying a higher return on their human capital abroad. How big is this incentive effect, and can it be strong enough to dominate the brain drain effect? To continue the numerical example, if the proportion of people who invest in education rises to 15 percent, and if we still assume that 20 percent of them leave, there would be more educated people in the country than had the economy been closed to migration. Is this just a theoretical possibility, or a real one? Well, the empirical studies that have tried to answer this question tend to support the brain gain (or beneficial brain drain) hypothesis. This holds true both for the studies using cross-country comparisons and for country case-studies.

The main cross-country study is a paper I have co-authored with Michel Beine and Frederic Docquier, entitled “Brain Drain and Human Capital Formation in Developing Countries: Winners and losers”, and published in *The Economic Journal* in 2008.² We proceed in two steps: we first estimate the elasticity of human capital to skilled emigration, measuring how emigration prospects for the highly-skilled affect gross human capital formation in home countries, controlling for past human capital levels and a series of country-characteristics.³ We find a point-estimate of around 5 percent; that is, doubling the propensity of

emigration for the highly-skilled (people with college education or more) generates an increase in the pre-migration stock of human capital of 5 percent.

In a second step we then use that point-estimate to compute the net gains or losses for all the countries of our sample (which consists of 127 developing countries). For this we need to proceed with a counterfactual simulation. Again, this is best illustrated through a numerical example. Assume a country with a population normalized to 100 people, out of whom 20 are educated and 80 are not. Let us further assume that emigration rates are 1/2 for the educated (50 percent) and 1/8 for the uneducated, that is, emigration propensities are higher for the educated by a factor of 4 (in the theoretical example above, the emigration propensity of non-educated workers was implicitly normalized to zero). After emigration, the country is left with 10 educated (as 10 out of 20 have emigrated)

So while there are losers and winners, the brain drain contributes to increase the overall number of highly-skilled people living in the developing world.

and 70 non-educated (as 10 out of 80 have emigrated). Has that country lost or gained from the brain drain, given what we know about the incentive effect?

Let us denote by H_a the “ex-ante” stock of human capital, before migration takes place. This is something we can observe and which in our case equals to 20 percent (then $H_a = 0.2$). The ex-post stock of human capital, after emigration is netted out, is also observed and in our case equals to 10/80 (then $H_p = 0.125$). But what would have been the country’s stock of human capital if there had been no emigration? To answer the question we do the following counterfactual simulation: the counterfactual stock of human capital, H_{cf} equals to the ex-ante stock minus the incentive effect. That is, $H_{cf} = H_a - a \cdot \ln(p_s/p_u)$, where a is the elasticity of human capital to emigration obtained in step 1 and p_s and p_u are the respective emigration propensities of skilled and unskilled workers.⁴ With our numerical example and point-estimate for the elasticity, this gives: $H_{cf} = 0.2 - 0.05 \cdot \ln(4) = 0.13$. That is, the counterfactual stock of human capital without emigration in our virtual economy would have been 13 percent. This means that it has lost half a percentage point (or 4 percent) of its human capital because of the brain drain, and not 20 percent, as one would think if we were not factoring in the fact the human capital formation is partly determined by emigration prospects.

When turning to real data, we found that there are more losing than winning countries and that the losers tend to lose more, but that in terms of head counts (or absolute changes), the gains from the winners out-weight the losses of the losers. For example, Surinam may well lose 20 percent of its human capital and China may gain only 1 percent, but 1 percent of the Chinese stock of human capital is way bigger than 20 percent of the Surinamese stock of human capital. So while there are losers

(1) Early theoretical contributions include Mounthford (1997), Vidal (1998), Stark *et al.* (1998) and Docquier and Rapoport (1999).

(2) See Beine *et al.* (2008) and its extension in Beine *et al.* (2010).

(3) If there is not only an effect of skilled emigration prospects on human capital formation, but there is also a reverse direction of causality from human capital formation on migration prospects, or if emigration and human capital formation are jointly driven by third, unobserved (omitted) variables, we call this “endogeneity”. In order to disentangle the first effect from the second and address the omitted variable problem, we used an Instrumental Variable Approach. It consists in predicting the variable of interest, emigration, using variables that have no independent effect on the dependent variable, human capital formation; that is, that presumably only affect human capital formation through their impact on skilled emigration prospects.

(4) \ln is the logarithm of the relative emigration propensity between skilled and non-skilled immigrants. This is typically used in empirical analyses to get the “elasticity” of a variable, that is a 1% change in the explanatory variable leads to a $\beta\%$ change in the dependent variable.

and winners, the brain drain contributes to increase the overall number of highly-skilled people living in the developing world.⁵

■ 5 Country case-studies: two “natural experiments”

There are many country case-studies using micro (household or individual) data, notably on countries with very high levels of brain drain, such as small Pacific or Caribbean islands. These studies have consistently found an overall positive effect of emigration on human capital formation, suggesting that even in extreme cases of very high brain drain, home countries can still experience a net gain, as if there was a special regime for them.

I will report here on just two studies which I see as the most convincing for the reason that they rely on so-called “natural experiments”.

Let me start with the study on Fiji by Chand and Clemens (2008). The story is the following (I apologize for the caricature I am making of Fijian past and recent political history). Fiji is a former British Colony initially populated by Polynesians (let’s call them native Fijians). During colonial times, the British brought many Indian workers to work on the sugar and other plantations. Around independence and thereafter, the two populations were of similar socio-economic status (income and education levels were quite similar) and about equal demographic size. Fijian political history became more turbulent in the late 1980s and early 1990s against the background of ethnic tensions that culminated in a military coup led by native Fijian officers. Following the coup, a discriminatory policy was introduced, favoring the native Fijians and putting in place restrictions on Indians’ access to universities, public employment, entrepreneurship, and more.

Facing violence and discrimination, many Indian Fijians started to contemplate emigration. Where to go? Obviously, the two main destinations are Australia and New Zealand. However, emigration to those countries is strongly restricted and regulated by a “points-based system” which is distorted to favor the highly educated and skilled. Indian Fijians, therefore, started to heavily invest in education and in spite of the discrimination they faced at home, they shortly overtook the Native Fijians in terms of educational attainment. Some did migrate, but some did not, and twenty years after the coup, the Indian Fijians living in Fiji enjoy much higher human capital and living standards than their “native” compatriots. As David Landes (1999) would put it: “don’t beat up the little guys!” This is a perfect illustration of the “option value” argument we put forward in Katz and Rapoport (2005): in a context of high political instability and macroeconomic volatility, education provides to its owner the option to emigrate

in case of bad realizations at home, and this option value grows with uncertainty. Hence, following the coup and the uncertain prospects they faced in its aftermath, Indo-Fijians invested more in education as a migration-based risk-diversification strategy.

The second micro study is from Nepal (Shreshta, 2016). Again, I will caricature the complex history of Nepal in order to make the intuitive argument. Nepal is populated by ethnic groups close either to the Tibetans or to the Indians, and by other minority groups such as the Gurkas. Such minority groups became enrolled on the side of the colonial power, England, in the course of the 19th century, culminating with the enrolment of Gurka men in the British Army. For more than a century, young Gurka men have been raised and trained to pass the very stringent tests required to join the British Army, bringing their families pride and income (the salary of a British soldier is about 100 times higher than rural wages in Nepal). Still, the Gurkas remained one of the most disadvantaged ethnic groups in Nepal in terms of education and income. In the early 1990s, the British Army introduced literacy and numeracy tests for its new recruits all over the world, and required the completion of middle-schooling. All of a sudden, being physically and mentally fit was not enough. Guess what happened? The Gurkas started to send their kids not just to physical training but also to school and collectively invested in the hiring of teachers and in schooling infrastructures. Even girls started to go to school thanks to economies of scale and peer effects. But only 1 percent of the candidates pass the test, and so the Gurkas who don’t go to the army end up applying their human capital in other domains, such as agriculture. Today the Gurka group has attained a higher than average level of education in Nepal, a catching-up process fully attributable to the change in the recruitment rules of the British Army.

I like this story because I see it as fully exemplifying the insights from the beneficial brain drain theory: international migration is characterized by small chances to succeed (in emigrating) and high stakes in case of success (high wage differentials). In this context more people will invest, or some people will invest more in education to increase their chances of emigration and of enjoying the higher wages and better amenities (for the most

part) abroad. For those who remain, the investment made may have turned out not profitable, but it is still socially beneficial and can even turn out individually beneficial due to externalities. Emigration prospects play the role, here, of an education subsidy (to the extent that educational attainment is not credit constrained), bringing private investment in education closer to its socially optimal level (as social returns to education are higher than private returns). Based on the above, it is doubtful that Ethiopia or Ghana would end up with more doctors and nurses if these were banned from emigrating, or whether the Philippines would have some of the best and popular nursing schools, and India some of the best and popular engineering schools of the developing world, if their graduates were banned or discouraged (through taxation

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(5) See Mountford and Rapoport (2011) for analyses of the brain drain impact on the world distribution of income.

or through a mercantilist rhetoric portraying them as traitors) from joyfully selling themselves to Western exploiters.

6 Skilled diaspora networks

The above-described “incentive” effect takes place before migration occurs; once migrants have left, however, they can still affect economic, political and social outcomes in their home country. By sending money or returning after some time,⁶ or by forming diaspora networks that serve as bridges between host and home countries. Along those bridges, many things can circulate: goods, investments, technologies, ideas, values. This is the last strand of brain drain research I want to emphasize before concluding. Indeed, being able to draw on a network of skilled compatriots scattered around the world (especially if they live in the leading countries in terms of technological innovation, financial power, and democracy standards) is crucial to many developing and emerging countries in their search for better integration into the global economy.

There is growing evidence and understanding that migrants in general, and skilled migrants in particular, favor the economic, financial and even political and cultural integration of their home country into the global economy. The recent literature has consistently shown this, starting from the “trade creating” effect of migration and ending with the uncovering of “social remittances” (Levitt and Lamba Nieves, 2011) in the realms of demography or politics).

Two forces are at play. First, an “information channel”, whereby migrants reduce transaction costs between their host and home countries, allowing more trade flows (both imports and exports) and inflows of Foreign Direct Investments as well as other forms of financial investments (e.g., international bank loans, purchase of home-country bonds, etc.). While for trade, there is no substantial difference between low- and high-skill migrants in terms of ability to convey the relevant transaction-facilitating information, for financial flows in general, and for FDI in particular, skilled migrants seems to have a significant advantage.⁷

And second, a “knowledge diffusion channel”, whereby migrants transfer knowledge, including technological knowledge, but also social norms, preferences and values (e.g. preferences for lower fertility or for democracy), from the host to the home economy. It is not clear whether high- or low-skill migrants have

an advantage in initiating such transfers, except for innovation adoption and diffusion, where, quite obviously, there is a strong advantage for the former.⁸

7 Conclusion

As we have seen, the recent economic literature does not support the traditional and still very popular view that the brain drain is an impediment to developing countries' current and future economic performance. To the contrary, the possibility for people to “sell” their human capital abroad generates incentives to invest more in human capital, and a demand for higher quality, more internationally transferrable education, which ultimately also benefits those who do not emigrate.

There are also counteracting forces of course: the depletion effect of emigration, the lack of incentives if people are credit-constrained, and some diversion in terms of fields of study away from the home countries' needs (e.g., geriatrics instead of pediatrics). And the benefits from skilled diasporas, which appear to be considerable and multi-dimensional, should not be overlooked. So even if one adopts a consequentialist view that

focuses exclusively on the effects of migration on the source countries, disregarding people's rights to emigrate and giving little weight to the migrants themselves, the evidence does not support what I would call the now outdated mercantilist view of the brain drain.

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(6) On brain drain and remittances, see Bollard et al. (2011) and Docquier et al. (2012).

(7) On trade, see Gould (1994), Rauch and Trindade (2002) on the role of ethnic Chinese networks and, more recently, Parsons and Vezina (forthcoming), who exploit the natural experiment of the Vietnamese boat people of the second half of the 1970s to identify the effect of migration networks using US States – Vietnam trade data. On FDI, see notably Kugler and Rapoport (2007), and Kugler et al. (2013) on financial flows.

(8) On technological knowledge diffusion see Kerr (2008), Agrawal et al. (2011) and Bahar and Rapoport (forthcoming). On political remittances, Spilimbergo (2009), Docquier et al. (2016) and Barsbai et al. (2016). On “malthusian” remittances, see Fargues (2007), Beine et al. (2013), Bertoli and Marchetta (2015) and Daudin et al. (2016).

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