



Policy Brief

Stanford Institute for Economic Policy Research

Who is afraid of the brain drain?

Human capital flight and growth in developing countries

Hillel Rapoport

The term "brain drain" was first popularized in the 1950s with reference to the immigration to the United States of first-rank scientists from countries such as the United Kingdom, Canada, and the former Soviet Union; it is now used in a more general sense to designate the international transfer of human capital (people with higher education) from developing to developed countries. During the 1970s, there was a great deal of passion around this issue; everybody took for granted that the emigration of highly skilled people was detrimental to the country of origin—and, after all, this would seem to be a piece of acquired wisdom. A number of prestigious academic economists were part of this consensus, notably Jagdish Bhagwati and his followers, who delivered more or less the following message: 1) the brain drain is basically a negative externality imposed on those left behind; 2) it amounts to a zero-sum game, with the rich countries getting richer and the poor countries getting poorer; and, 3) at a policy level, the international community should implement a mechanism whereby international transfers could compensate the sending countries; for example, through a "tax on brains" to be redistributed internationally.

During the last two decades, there has been a tremendous increase in the magnitude of the brain drain. However, as I briefly explain in this note, it may well be that some developing countries, if not the majority of them, have benefited from this brain drain. The main reason for this is that migration prospects increase the expected return to education and, hence, foster domestic enrollment in education.

How big is the brain drain?

In 1975, the United Nations estimated the total number of highly skilled South-North migrants for 1961-72 at only 300,000. Less than a generation later, in 1990, the U.S. Census

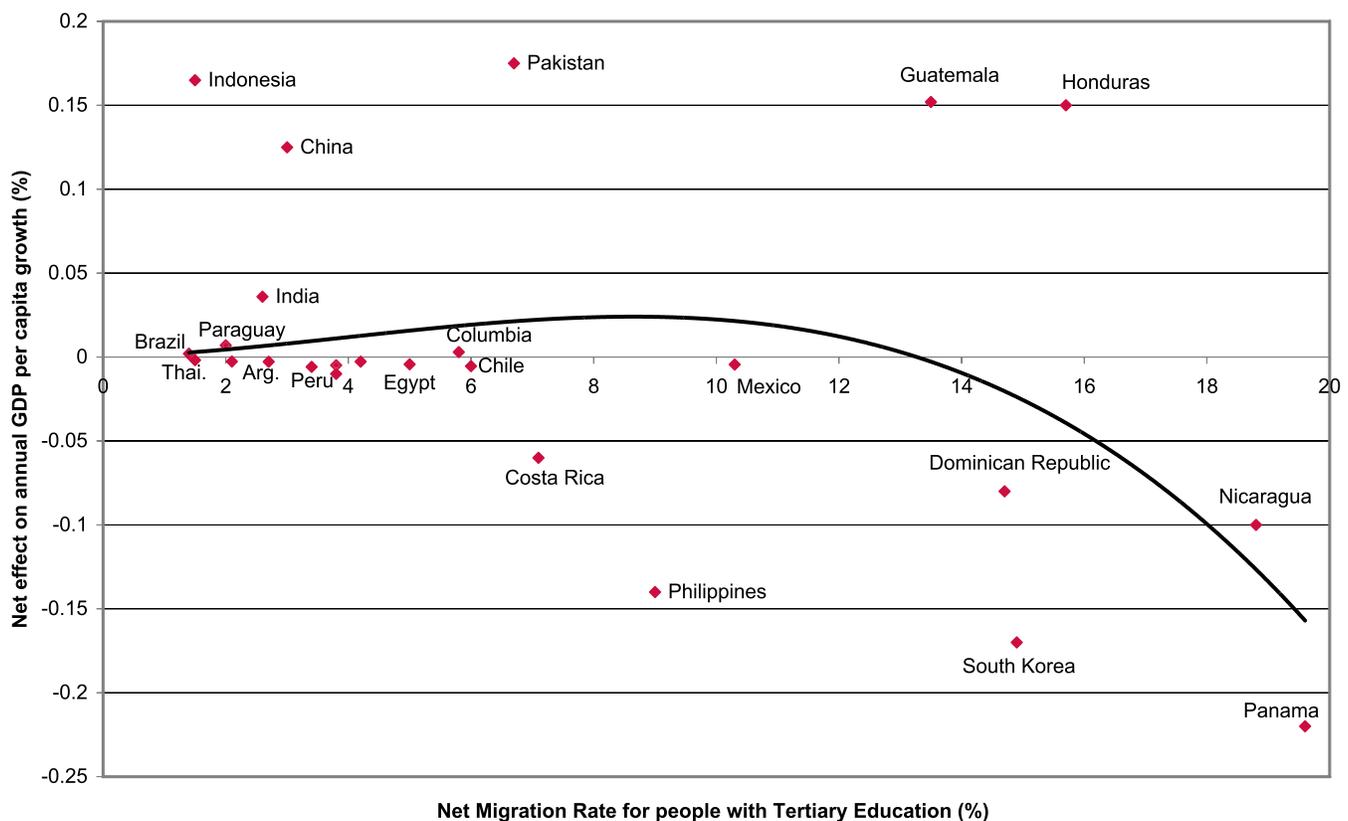
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revealed that there were more than 2.5 million highly educated immigrants from developing countries residing in the United States alone, excluding students! For that same year, the International Labor Organization (ILO) estimated the total cumulative loss of "brains" by region at 15% (of the remaining stock of people with higher education) for Central America, 6% for Africa, 3% for South America, and 5% for Asia. Country studies commissioned by the ILO also showed that nearly 40% of Philippine emigrants are college educated, and, more surprisingly, that Mexico in 1990 was the world's third-largest exporter of tertiary educated migrants. Although the numbers may be disputable, it is clear that the brain drain has increased dramatically since the 1970s. This is due partly to the introduction of "quality-selective" immigration policies in most OECD countries (point systems in Australia and Canada in the 1980s, U.S. Immigration Act of 1990, etc.). For the most part, however, the migration of skilled labor is driven by the general trend toward economic globalization, which strengthens the natural tendency for human capital to agglomerate where it is already abundant.

What feedback effects?

Obviously, the brain drain may induce positive feedback effects such as remittances and return migration after additional skills have been acquired abroad. However, we know from household surveys that transfers from educated migrants are not necessarily higher than for uneducated migrants; the former have higher earnings potentials, but migrate on a more permanent basis (with family) and, hence, tend to remit relatively less than their unskilled compatriots. We also know that in general, return migration is not significant for the highly educated. Another channel whereby the brain drain may positively affect the source country is through the creation of business and trade networks; such a "Diaspora externality" has long been recognized in the sociological literature, but its economic role appears too limited to undermine the strongly negative view of the brain drain that has prevailed until very recently.

Figure 1: Brain Drain and LDCs' Growth



An optimal brain drain? Theory

With the emergence of New Growth theories and the idea that any depletion of a country's stock of human capital is detrimental to its current *and* future economic performance, it is unsurprising that the first models to address the issue of the brain drain in an endogenous growth framework all emphasized its negative effects. At the same time, however, a series of studies tried to promote the simple idea that one should also look at *how* a given stock of human capital is built up. In particular, it is likely that in the presence of huge inter-country wage differentials, as is the case between developing and developed countries, the prospect for migration deeply modifies the incentive structure faced by developing countries' residents when making their education decisions.

Assume, for example, that the expected annual wage premium for someone with tertiary education is \$5,000 in the home country and \$30,000 in the United States; then, even a relatively small probability of immigration to the United States of, say, 20%, has a huge effect on the expected return to human capital (in this numerical example, it is exactly doubled) and, therefore, is likely to foster domestic enrollment in education significantly. When this incentive effect dominates the emigration effect, the country's stock of human capital is in fact increased. The conditions required for this possibility to materialize have been the subject of a couple of recent contributions, including my joint article with Michel Beine and Frederic Docquier in the February 2001 issue of the *Journal of Development Economics*. Although it is a simplification, I think I don't distort too much the essence of our results if I summarize them through an inverse U-shaped relationship between migration and growth: Too much migration is detrimental, but too little is sub-optimal.

Who loses, who wins, and how much? Evidence

William Carrington and Enrica Detragiache of the International Monetary Fund provided data that made an empirical assessment of the above arguments possible. Using 1990 U.S. Census data and various data from other OECD countries, they

came up with reliable indicators of emigration rates at three educational levels for about 50 developing countries (IMF Working Paper #98/102). Using their estimates for the highest educational level, we uncovered a positive and highly significant effect of migration prospects on human capital formation in a cross-section of 50 developing countries.

We also computed country-specific effects, with the following results. First, countries that experience a positive growth effect (the "winners") generally combine low levels of human capital and low migration rates, whereas the "losers" are typically characterized by high migration rates and/or high enrollment rates in higher education (this is quite intuitive, since in this case most migrants are picked up from a stock of people that would have engaged in education even without any migration prospects). Second, we showed that except for extreme cases such as Guyana and Jamaica, the growth effects of the brain drain are relatively limited: around plus or minus a maximum 0.20% in terms of annual GDP per capita growth; this is not negligible, however, from a dynamic perspective. Finally, it is also striking that while there are more losers than winners, the winners include the largest countries in terms of demographic size and represent more than 80% of the total population of the sample. For the most part, these results are apparent on Figure 1, which nicely illustrates the non-linear relationship between migration and growth. For more details on the results and the methodology, I refer the interested reader to CREDPR Working Paper #129, March 2002

Conclusion

The main conclusion to draw from the above analysis is that for any given developing country, the optimal migration rate of its highly educated population is likely to be positive. Whether the current rate is greater or lower than this optimum is an empirical question that must be addressed country by country. This implies that countries that would impose restrictions on the international mobility of their educated residents, arguing for example that their human capital has been largely publicly financed, could in fact decrease the long-run level of their human capital stock. This also suggests that rich coun-

tries should not necessarily see themselves as free riding on poor countries' educational efforts. The difficulty is then to design quality-selective immigration policies that would address the differentiated effects of the brain drain across origin countries without distorting too much the whole immigration system; this could be achieved, at least partly, by designing specific incentives to return migration to those countries most negatively affected by the brain drain, and to promote international cooperation aimed at furthering brain circulation.

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His research focuses on the growth effects of migration in developing countries, either directly (e.g., the brain drain, remittances, return migration) or through the impact of migration on economic inequality. He is currently preparing a handbook chapter on "The Economics of Migrants' Remittances," and also works on the political economy of ethnic conflicts and the institutional analysis of minorities.



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