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The New Economics of the Brain Drain

by

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Details of the new research reported in this article were presented in the Tjalling Koopmans Distiguished Lecture delivered by the author at the International Institute for Applied Systems Analysis (IIASA). The text of the Koopmans Lecture was published in 2004 in *World Development* (Volume 32).

Abstract

For nearly four decades now, the conventional wisdom has been that the migration of human capital (skilled workers) from a developing country to a developed country is detrimental to the developing country. However, this perception need not hold. A well designed migration policy can result in a “brain gain” to the developing country rather than in just a “brain drain” from it, *as well as* in a welfare increase for *all* of its workers - migrants and non-migrants alike - as new research suggests.

Key words: migration, human capital formation, externalities, social welfare

JEL classification: F22; H23; I30; J24; J61

A detailed reasoning

When we refer to “human capital,” we have in mind the productive attributes of individuals that are acquired or formed either formally (for example, by attending a college) or informally (for example, by on-the-job training as a by-product of regular work). Just as physical capital is an asset that yields a flow of output, human capital is an asset, embodied in human beings, that yields a flow of income. We can reasonably assume that individuals are naturally endowed with some ability (say physical strength) that enables them to produce, hence earn. But typically, individuals enhance or supplement their natural endowment by investing time and resources in the acquisition of skills, technical knowledge, and professional qualifications. Since undertaking such an investment today yields (expected) returns tomorrow, we have a resemblance with the formation of physical capital. Hence, we resort to the expression “human capital formation”. While not all the human capital that an individual has is the outcome of decisions made by the individual, in the new research reported in this article we study investment behavior under the assumption that the individual is decisionally responsible for the acquisition of the productive assets that are embodied in him.

Much of the human capital in a country is a result of decisions made by individuals. However, individual choices seldom add up to the social optimum. In particular, individuals do not consider the positive externalities that human capital confers in production. The result is that they acquire less human capital than is socially desirable. If individuals could be persuaded to form more human capital, the human capital in an economy could rise to the socially optimal level. What makes an unfortunate state of affairs worse is that whatever quantities of human capital are formed, some - and often more than a mere some - are lost through the migration leakage. Therefore, the main concern up until now has been to contain the leakage. In the words of a World Development Report: “Can something be done to stop the exodus of trained workers from poorer countries?” (World Bank 1995, p.64). This concern is in congruence with the large “brain drain” literature (for a

systematic review see Bhagwati and Wilson 1989), and is regularly echoed by the informed press. For example, in its May 31, 2001 lead article, while advocating the entry of migrants into Europe, *The Economist* hastens to add: "There is a risk, especially when immigration policies target only the highly skilled, that the best talent will be drained from poor countries to rich ones." Although expressed more cautiously, the viewpoint of Carrington and Detragiache (1999) presented in a bulletin of the International Monetary Fund is quite similar: "Another important issue is the extent to which the benefits of education acquired by citizens of developing countries are externalities that individuals cannot be expected to take into account when making their private decisions. If such externalities are substantial, as is emphasized by the "new growth theory," then policies to curb the brain drain may be warranted."

New research turns this concern on its head. At the heart of this research is the idea that the prospect of migration can induce individuals to form a socially desirable level of human capital. The point is that compared to a closed economy, an economy open to migration differs not only in the opportunities that workers face, but also in the structure of the incentives that they confront: higher prospective returns to human capital in a foreign country impinge on human capital formation decisions at home. The research considers a setting in which an individual's productivity is fostered by his own human capital as well as by the economy-wide average level of human capital. It examines the relationship between the actual formation of human capital in an economy and the socially optimal formation of human capital in the economy. It identifies conditions under which, from a social point of view, too little human capital formation takes place in the economy. It then examines the relationship between the actual formation of human capital and the socially optimal formation of human capital in the presence of a possibility of migration. The research provides conditions under which per capita output and the level of welfare of all workers are higher with migration than in its absence, and it shows that a restrictive migration policy can enhance

welfare and nudge the economy toward the social optimum. It derives this result first, when all workers are alike and are equally capable of responding to the migration prospect, and second, when workers differ both in their skills and in their ability to respond. The research demonstrates that migration is *conducive* to the formation of human capital and thus casts migration as a harbinger of human capital gain rather as the culprit of human capital drain. An interesting implication is that the gains from migration to the home country accrue neither from the remittances that migrants send nor from migrants' return home with amplified skills acquired abroad.

Summing up

In summary, the research shows that when the productivity of an individual in a closed economy or in a small open economy without migration is fostered not only by his own human capital but also by the average level of human capital, the individual who optimally chooses how much to invest in costly human capital formation will, from a social point of view, under-invest. Consequently, social welfare is affected adversely. The research then shows that somewhat surprisingly, the facility of migration can mitigate this undesirable outcome. In fact, a well-specified migration policy can ameliorate the tendency to under-invest in human capital and permit the formation of a socially desirable level of human capital. The favorable effect of migration and the associated welfare gain apply not only when all individuals can respond to the migration prospect but also when only a subset of individuals is affected. In the latter case, even those who cannot gain from migration by participating in it stand to gain from the response of others.

The propensity to acquire skills is not invariant to the possibility that the skills will be highly rewarded. This consideration appears to have escaped the attention of scholars of migration for many years. The pioneering work of Grubel and Scott (1966) provides a careful account of why a

country need not "lose by the emigration of highly skilled individuals." According to Grubel and Scott (1966, p. 270): "[E]migration should be welcomed whenever two conditions are met. These are, first, that the emigrant improves his own income and, second, that the migrant's departure does not reduce the income of those remaining behind". Neither Grubel and Scott nor those who followed in their footsteps have mentioned that the prospect of migration modifies the human capital formation calculus, thereby entailing a welfare gain for the non-migrants (rather than being inconsistent with a welfare loss). The new research draws attention to this possible relationship and shows that the behavioral response to the prospect of migration nourishes both a "brain drain" and a "brain gain," and that a skilfully executed migration policy can confine and utilize the response to secure a welfare gain for all workers.

Beyond countries

Are there any lessons that entities other than countries, for example, companies and corporations, can draw from the "New Economics of the Brain Drain?" Consider a world that consists of one country. There are two big orchestras in the country: a good orchestra, GO, and an excellent orchestra, EO. The pay of the EO players is higher than the pay of the GO players. Because of concerns that losing better GO players to the EO will hurt the quality of the GO performances, the GO management insists that the GO players commit not to leave for the EO. (Alternatively, the management of the GO could have made it known that a departure for the EO will be associated with a severe financial penalty - for example, the forfeiting of pension rights.)

This management practice may not be wise. Suppose instead that the GO managers permit the EO musical directors to hire randomly a small number, say two, of the finest GO players. This policy change is public knowledge. As a consequence, the GO players will practice harder, prepare more for rehearsals, and excel in their playing. This incentive would not have been present without the

possibility of being hired by the EO. When all the GO players are equally eligible for hire by the EO (even though only two will actually be hired), the quality of playing of the GO can very well become higher *even after* the departure of the two players. When fine-tuned, the probability of departure could be turned into a management policy tool aimed at enhancing the quality of the GO musical output.

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