"Brain drain and optimal funding of education in developing countries"

(Extended abstract)

In this article, we investigate the impact of Brain Drain on education funding policies in developing countries. Should the government reduce its intervention to minimize fiscal losses or should the government increase subsidies to compensate for human capital losses? This issue is crucial in developing countries where brain drain operates as a part of the globalisation process. In some cases, more than 60 percent of educated workers leave (temporarily or permanently) their origin country. This is the case of most Caribbean and Pacific islands, of some Central American countries. High migration rates are also observed in Western and Eastern Africa.

In theory, mobility of the fiscal basis reduces the equilibrium tax rates and the provision of public goods (Oates, 1999). Thus, one can expect a reduction of the tax rate in the occurrence of Brain Drain. Such intuition is formalized by Justman and Thisse (1997, 2000). They develop a two-region model where education is publicly funded and where skilled workers choose their location by maximizing utility. They show that, under reasonable assumptions, the mobility of skilled workers leads to under-investment in public education by local authorities.

Such results are not directly transposable to the very specific case of developing countries. Hence, our analysis departs from traditional studies in two major respects. First, the perspective of migration to a richer country increases the expected return on human capital investments in sending countries. In the line of Stark et al. (1997, 1998), Vidal (1998) and Mountford (1999), we consider that the prospect of migration to a richer country may lead individual to invest more in education. Despite the questionable quality of existing data, Beine et al (2001, 2003) provide empirical support to this incentive effect. Second, In most developing countries, the share of tertiary educated workers is below 5 percent. Reaching a social optimum would probably require making education mandatory and subsidizing education more generously. Nevertheless, such policies are usually unrealistic given the high costs of perceiving taxes (tax evasion, joining the informal sector, corruption...). In a closed economy context, large perception costs involve a second best education policy where the share of educated is far below its optimal value.

In some sense, our analysis builds on Stark and Wang (2002), but we depart from two points. Local governments are not able to decentralize the social optimum, even under autarky. Moreover, they do not control migration decisions. We find that the possibility of migration generates an increasing fiscal burden. The autarkic policy becomes unsustainable: taxes and/or subsidies must be adjusted to avoid an explosive indebtedness. We show that in the more usual case where a brain drain cannot restore optimality (i.e.; perception costs make taxation distortion), the second best tax rate always increases compared to autarky. This result is in sharp contrast with the rest of the literature. Simulations show that the relation between the tax rate and the proportion of educated people who leave is not monotonic.

Summing up, we have obtained mainly four results. The first best optimal cannot be implemented if perceptions cost are high enough, The autarkic education policy is unsustainable in the presence of brain drain. The conditions under which Brain Drain is beneficial are more restrictive. Finally, at the second best solution, brain drain raises the optimal education tax.

Our two first conclusions are quite trivial. The third one lines up with the new literature on Brain Drain. The possibility of immigration to higher wage countries may stimulate individuals to pursue higher education while anticipating to find better-paid work abroad (Monford (1999), Beine et al (2001)). Following Stark and Wang (2002), one can interpret such positive effect on the high education enrolment as a disguised subsidy. But if the government introduces a real subsidy, the incentive effect of brain drain decreases.

Our last and main result departs from the existing literature. Brain drain increases the incentive effect of the educational subsidy. Due to the possibility of migration, for the same level of subsidy, an individual anticipates that he will not pay the payroll tax with some probability. Thus, for him, education becomes less costly.

This contrasting result first relies on our particular fiscal framework designed to fit with developing economies. In these countries, due to tax evasion, joining the informal sector, administrative weakness, corruption, etc... taxation induces huge perception costs, higher than in developed countries. As a benchmark, the World Bank (1998) suggests that such a cost may reach a value of 0.9 .

Second, we do not consider any fiscal competition between sending and receiving countries. Economically speaking, developing countries are small. Migration and capital outflows

(from one isolated sending country) are too small to affect the receiving countries' equilibrium wages and tax rates. Hence, changes in local education policies should not induce significant political reactions in receiving countries. Similarly, developing nations can be considered as price-takers on the international markets.

By the end it is worth stressing that fiscal resources are not the unique source of education funding in developing countries. Foreign debt also play a major role in financing public policies. Therefore one could extend the analysis in exploring the fiscal effect of brain drain in heavily indebted developing countries.

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