The migration of elites: risks and opportunities for development

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1. What are we talking about?

- By “migration of elites” or “brain drain” we mean migration of people with high (tertiary) education – an elite indeed in LDCs (5%).

- Numbers: 180M migrants worldwide in 2000, half in OECD countries. Of these 90M, 60M were 25+ and can be split equally by education levels (primary, second., tertiary).

- Skilled migrants in OECD countries come from Africa (7%), Asia (35%), Latin America (18%), Eastern Europe (8%) and from other OECD countries for the remaining third.

- **The equal split into three skill levels should not hide the dramatic rise of skilled migration in the last decade: +70% for migrants with tertiary education against only +13% for unskilled migrants. Caveat: illegal migration**

- **This is driven both by *market forces* (positive self-selection, agglomeration effects) but also by the introduction of *selective immigration policies* since the 80s.**

- **Should we (they) worry?**

- **The pessimistic view is dominant in policy forums and economic textbooks. Illustration:**

"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, 7th Edition, 2001).**

A more optimistic view is emerging thanks to:

- *New theoretical arguments:* migration prospects raise the expected return to education and thus foster investment in education; when this incentive effect dominates, the home country can gain.

- *New data:* Carrington and Detragiache (IMF, 1998), extended and improved by Docquier and Marfouk (World Bank, 2005).

- *New evidence:* the first cross-country studies find evidence of a positive incentive effect.

2. Theory and evidence

2.1. A worst-case scenario

The "pessimistic" models of the 1970s were based on a number of critical assumptions:

i) Migrants self-select out of the population

ii) No uncertainty on migration opportunities

iii) Complete disconnection after emigration.

In such conditions, brain drain can only hurt those left behind due to technological complementarities between skilled and unskilled labor and to fiscal, technological, intra- and intergenerational externalities.

Waving the above listed assumptions allows for potentially beneficial effects to kick-in:

- migrants may return after a while
- the education decision may be made in a context of uncertainty regarding future migration possibilities
- skilled migrants may send remittances
- skilled migrants may take part in scientific, business and other types of networks that indirectly benefit the source country.

We discuss these possibilities in the next sub-sections.

2.2. Temporary migration

Selective immigration programs are often intended for temporary migrants; in addition, temporary migration may be voluntary.

Potential benefits emphasized in recent theoretical literature:

- Returnees contribute to technological diffusion (Dos Santos & Postel-Vinay, 2003)
- Negative selection in return migration that still embodies a brain gain (Stark et al., 1997)
- Return with savings, managerial skills (McCormick & Wahba, 2001, Dustmann, 2003)

Evidence on temporary/return skilled migration

- In general, return migrants are negatively self-selected; return is more a consequence than a trigger of growth.
- Example: proportion of PhDs in Science and Engineering who returned to Taiwan, Korea, China, India, 1970s/1990s.
- Indian software industry: few returning engineers in Bangalore according to Saxeenian (2001), many (about 35%) higher-level employees with work experience abroad according to Commander et al. (2004)

2.3. Uncertainty

Argument: migration is probabilistic (various sources of uncertainty), raises the expected return to schooling and thus enrollment rates

Micro-level evidence:

- **Kangasniemi et al. (2004), survey on Indian MDs in the UK: 30% recognize that migration prospects affected their education choices; respondents think that 40% of medical students in India contemplate migration**
- **Clemens (2005): dramatic rise in enrollment in nursing schools in South Africa following recent UK relaxation of recognition criteria.**

- **Robert Lucas (2004), noting that 18% of all Filipino graduates live in the US:**

"The tertiary enrollment rate [of the Philippines] is among the highest in the world [especially] for women … As of 2001, 72% of all students enrolled in higher education were in private institutions … though the return for those who remain home is low. It is thus difficult to believe that these high, privately financed, enrollment rates are not induced by the possibility of emigration upon graduation. There are even signs that the choice of major field of study ... responds to international demands. Higher education in the Philippines is almost certainly induced to a significant extent by the potential for emigration".

- **Macro-level evidence: see below**

2.4. Remittances

- Can remittances sent by skilled migrants compensate for the "loss of brains"?

Theory

- The two main motivations to remit are (familial) altruism, and exchange (generally for preparing one's return). It is therefore a priori unclear whether the educated remit more: higher income potential, but move with family and on a more permanent basis.

Evidence on remittances

Micro data:

- **Kangasniemi et al. (2004): nearly half of Indian medical doctors in the UK send remittances (16% of income on average).**
- **McCormick and Wahba (2001): skill-acquisition more important for educated migrants than savings to access to self-employment.**

Macro data:

- **Faini (2005): the proportion of skilled migrants has no significant effect on aggregate remittances.**

2.5. Network and Diaspora effects

Four types of networks:

- ***Migrant networks*: cause chain migration through lower migration (search) costs and higher expected wages**
- ***Scientific networks*: brain exchange and circulation**
- ***Business networks:* reduces transaction costs between host and home countries and thus favor trade and FDI inflows**
- ***Political networks:* impact on institutions at home ("voice after exit")**

Evidence on business networks

Trade:

- **Case-studies: ethnic Chinese networks (Rauch and Trindade, 2002, Rauch and Casella, 2003). Heterogeneous products.**
- **Cross-country comparisons: Lopez and Schiff (1998), using trade liberalization episodes. Complementarity between trade and unskilled migration, substitution between trade and skilled migration.**

Foreign Direct Investment (FDI):

- **Micro-level: studies on the software industry**

- India: Commander et al 2004, Saxeenian 2001

- Ireland and Israel: Arora & Gambardella 2004

- **Macro-level: Kugler and Rapoport (2005), using U.S. migration and FDI data. Findings:**

- Contemporaneous substitution and dynamic complementarity between migration and FDI (for both skilled and unskilled migration).

- By sector: significant results for substitution between unskilled migration and FDI in manufacturing and complementarity between skilled migration and FDI in the services.

3. Brain drain and human capital formation: evidence

This section reports results from cross-country studies (incentive effect).

Beine, Docquier and Rapoport (2001)

- **Cross-section of 37 developing countries**
- **Migration has a positive effect on human capital formation, stronger in poor countries.**
- **Problem: used gross migration rates as a proxy measure for the brain drain due to the lack of international data by education level.**

Beine, Docquier and Rapoport (2003)

- cross-section of 50 developing countries, using Carrington and Detragiache (1998).
- positive effect of migration on gross (pre-migration) human capital formation. The coefficient on the migration rate is about 0.05 (very stable), which is not negligible.
- country specific effects: losers characterized by high migration rates and/or high human capital stocks; more losers, but winners represent 80% of the sample population (include China, India, Indonesia, and Brazil).

Faini (2003)

- No significant effect of emigration on enrolment in higher education.
- Problem: results based on schooling data known to raise measurement errors issues.

Beine, Docquier and Rapoport (ongoing)

- Use Docquier-Marfouk and more controls
- More than 100 observations (50 previously)
- Results: positive effect still present with better estimates (see Table 1), same results for winners and losers.

Table 1. Cross-section analysis - Dependent variable = gross investment in human capital

Variables	(1)	(2)	(3)	(4)	(5)
Skilled migration rate	0.033***	0.034***	0.039***	0.031**	0.037***
Initial level of human capital	0.233***	0.213***	0.241***	0.227***	0.257***
High education expenditures	0.013*	0.012**	0.014***	0.014**	0.015**
Sub-Saharan dummy	-0.019***	-0.014***	-0.017***	-0.015*	-0.015*
South America dummy	0.009	0.012**	0.009*	0.011*	0.008
Investment in physical capital	2.076	2.129	-	1.52	-
Inequality measure	-6.268	-0.140	-	-0.144	-
Remittances	-5.515	-	-	-	-
R2	0.866	0.786	0.791	0.787	0.791
J Test	-	-	-	0.283	0.650
Number of observations	101	101	110	95	102

Notes: (a) White corrections for heteroscedasticity; b) Column 1-3: OLS estimation; c) Column 4-5: Instrumental variable estimation, 3 instruments used and a constant;

d) Instruments: population size, ethnic diversity in non democratic states, stock of emigrants in OECD countries

Beine, Defoort and Docquier (ongoing)

- Use Docquier-Defoort panel dataset
- Estimate a β-convergence equation for gross human capital formation, with country and time fixed effects + interactions between emigration rates and income group dummies
- Results: fixed effects, β (negative), and interaction between emigration and middle-income status (positive) highly significant
- Interpretation: there is convergence, and the incentive effect operates only for middle-income countries (consistent with theory).

4. Policy issues
4.1. Immigration policy

Theory suggests that without feedback effects, source countries can still gain if:

- **There is an incentive effect (convex combination of wage-gaps and migration probabilities without credit constraints).**
- **Skilled emigration rates are not too high.**
- **Combining the two, potential winners are relatively large, middle-income countries.**
- **Confirmed by cross-sectional (for required demographic size) and panel-data (for required level of income) results.**

Can this guide immigration-policy?

- YES, but to the extent that immigration policies of destination countries can discriminate among migrants of different origins -- raises legal and moral questions.

- Difficulty: design quality-selective policies that can address the differentiated effects of the brain drain across origin countries without distorting too much the whole immigration system.

4.2. Education policy

- **Is it still optimal to subsidize education if people emigrate once educated?**

- **In a model with homogenous agents, Stark and Wang (2002) suggest that migration options can substitute for education subsidies.**

- **Not true with heterogeneous agents: brain drain can be detrimental and adjusting through taxes or subsidies raises an efficiency-equity tradeoff (formal discussion in Docquier and Rapoport, 2005).**

4.3. Taxation policy (Bhagwati tax)

Do we need a Bhagwati tax to compensate the origin countries for the losses incurred as a result of the brain drain? Two remarks:

- The concept "surplus sharing" may be more appropriate than "compensation" (recall there are winners among source countries).
- International tax cooperation not easy to achieve, may require mediation of international bodies (on feasibility, see Desai, Kapur and McHale, 2004,). Part of the "global fiscality" debate

Finally, are we sure a Bhagwati tax would benefit the source country?

Docquier and Rapoport (2005) show that:

- The tax would increase human capital formation at origin only in case of a DBD (compensation principle) or, in the event of a BBD, if credit constraints are binding.
- In case of BBD with unbinding constraints, the effect is to lower the incentive effect; for given migration probabilities, this can only harm the home country.
- Policy implication: don't compensate all countries indistinctively.