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ABSTRACT

Brain Drain-Induced Brain Gain and the Bhagwati Tax: Are Early and Recent Paradigms Compatible?

Based on a welfare-maximization model of skilled migration where education generates a positive externality, this paper examines whether the early view regarding brain drain's (BD) negative impact on source countries and the Bhagwati tax (BT) associated with it, is compatible with the recent more optimistic BD-induced brain gain view. I derive BD's impact on education, welfare, optimal education subsidy (s), and a combination of s and BT, when residents' (emigrants') weight in the government's objective function is 1 (1 – β), with β ε [0,1]. I find that: i) education, welfare and s are higher (lower) under an open than under a closed economy for 1 – β larger (smaller) than the ratio of source-country to host-country income; ii) s and BT are 'policy complements,' i.e., they are positively related; and iii) BT increases with β and reaches a maximum at β = 1. Two implications and a proposal are: a) The early literature focused on resident – rather than on migrant – welfare (the β = 1 case), which is precisely where the optimal BT is largest; b) A second policy instrument should be useful, especially if there are constraints on making changes in the other one. Thus, as opening up the economy implies a lower s, raising BT should be beneficial if, say, parents' and teachers' organizations make it politically difficult if not impossible to reduce s; c) A proposal for collecting the tax is presented.

JEL Classification: F20, F22, I25, O15

Keywords: brain drain, brain gain, Bhagwati tax, education subsidy, welfare

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1. Introduction

The literature's view on the impact of the brain drain – or skilled (tertiary educated) migration – on migrants' source countries has evolved over time. Early studies (e.g., Grubel and Scott 1966; Bhagwati 1972, Bhagwati and Hamada 1974, 1982) viewed it essentially as negative, leading to a loss in fiscal revenue, human capital and the latter's positive externalities.[1] This led Bhagwati (1972) to propose that skilled migrants pay a tax – known as the 'Bhagwati tax' – on the income earned in the host country and transfer it to their source country as compensation for these losses.

The last three decades have seen renewed interest in the issue as skilled migration to the OECD has grown significantly faster than unskilled migration. Docquier and Marfouk (2006) show that the former was over four times the latter in 1990-2000 (63.7 percent vs. 14.4 percent, respectively). And the skilled migration rate exceeded the unskilled rate in 2010/11 in 138 of 145 developing source countries with available data (UN-OECD Report 2013). The skilled share of OECD immigrants is also above that of the OECD's native population. For instance, college graduates accounted for 31 percent of US-born adults and for 48 percent of US immigrants in 2011-2015, with the latter figure 55 percent higher than the former (Batalova and Fix 2017).[2]

The renewed interest in brain drain-related issues led to a series of studies over the last two decades showing that, given the higher return on education in the North than in the South, South-North migration prospects raise education's expected return and hence raise its level (e.g., Mountford 1997; Vidal, 1998; Beine et al. 2001, 2008; etc.). Beine et al. (2008) found that countries with low (high) human capital levels and brain drain rates experienced a net brain gain (drain), with a net brain drain for a majority of countries and a net brain gain for developing countries as a whole. This led the authors – and much of the recent literature – to a more optimistic view of the brain drain.[3]

[1] Though they recognized the brain drain benefits (e.g., remittances, increased trade, etc.), they viewed its net impact as reducing source countries' welfare.

[2] Two major reasons for the brain drain's rapid growth are the increase in the number of countries with skill-selective immigration policies – such as the points system – and the globalization of the market for talent (ILO 2006).

[3] On the other hand, a recent study (Schiff 2018) finds that a net brain gain's welfare impact on source countries' resident (or non-migrant) population is ambiguous or negative in most scenarios considered.

This paper combines recent and early approaches to the brain drain issue, the brain-drain-induced brain gain and the Bhagwati tax. It examines the impact of a brain drain on welfare under a positive education externality. A welfare-maximizing government would provide an education subsidy in order for individuals to act as though internalizing the externality when selecting their education level. I solve for the optimal subsidy under a closed and open host country immigration policy and examine the Bhagwati tax's welfare impact and its relationship with the education subsidy. Having an alternative policy available to respond to changes in circumstances should be useful in the case where the subsidy cannot be easily adjusted, for instance due to political constraints.

The remainder of the paper is organized as follows. Section 2 presents the model. Section 3 determines the optimal level of education, welfare and education subsidy, with Section 3.1 (3.2) doing so under a closed (open) economy. The welfare impact of the Bhagwati tax and its relationship to the optimal education subsidy is examined in Section 4. Section 4.1 (4.2) assumes residents' value is equal to (greater than) migrants' value for the government. Section 5 concludes. The Appendix examines the issue of collection of the Bhagwati tax and presents two proposals.

2. Model

The "points system", which has prevailed in Australia, Canada and the UK for a number of years, places a great importance on education, with immigration probability increasing with applicants' education level. Additional countries where a share of the immigrants is selected on the basis of educational attainment include Germany, France and the US (Marshall 2011).

For simplicity's sake, individuals are assumed to be homogenous,[4] live and work for one period, and invest in education at the start of the period. Denote the country of origin (destination) by "0" ("d"), income of source country residents (migrants) by y_0 (y_d), expected income by y, migration probability by $p \in [0, 1)$, human capital by $h > 0$, its average by H (with $h = H$), and consumption

[4] Under homogeneity, a brain drain under a points system raises the average level of education (H), i.e., it induces a net brain gain (or beneficial brain drain) in the absence of intervention. Its impact on average education consists of two parts: an incentive impact, and the brain drain impact per se. The possibility of skilled emigration raises the incentive to acquire education and generates a brain gain ex ante, i.e., before emigration takes place. Second, the brain drain itself has no impact on average education since migrants and residents are identical. Under intervention, whether a brain drain raises H depends on whether the government values residents as much as or more than emigrants (see Section 4). For an analysis of brain (and ability) drain under heterogeneity, see Schiff (2017).

by c. Individuals are risk-neutral and select h to maximize utility $u = u(c)$, where u rises monotonically with c (i.e., $u'(c) > 0$). Given that solutions for h that maximize c also maximize u, I assume for simplicity that $u = c$, $c > \underline{c} > 0$, where $\underline{c}$ is consumption's subsistence level.

Average education, H, generates a positive externality, γH, $\gamma > 0$. Residents' income is $y_0 = \alpha_0 h + \gamma H$ $(\alpha_0 > 0)$, and migrants' income is $y_d = \alpha_d h$ $(\alpha_d > \alpha_0 + \gamma,\ \alpha_0 > \gamma)$.[5] Expected income is $y = (1-p)y_0 + py_d = (1-p)(\alpha_0 h + \gamma H) + p\alpha_d h$.

Empirical evidence has shown that investment in education exhibits diminishing returns. Hence, since y_0 and y_d are linear in h, I assume that the education cost, C, is quadratic, namely $C = \frac{h^2}{2}$. With an education subsidy (or tax) equal to a share, s, of $h^2/2$, the cost is $C(s) = (1-s)h^2/2$. Assume the government also levies a Bhagwati tax at rate t on emigrants' income. Then, consumption is given by $c = (1-p)(\alpha_0 h + \gamma H) + p\alpha_d(1-t)h - \frac{(1-s)h^2}{2} - T$, where $T \gtrless 0$ is the budget-neutral lump-sum tax or subsidy associated with the education subsidy and the Bhagwati tax.

As mentioned earlier, under the points system, the immigration probability p increases with h. Thus, assume $p = \pi h, \pi > 0$. Then, $c = (1-\pi h)(\alpha_0 h + \gamma H) + (\pi h)\alpha_d(1-t)h - \frac{(1-s)h^2}{2} - T$, or:

$$c = \gamma H + (\alpha_0 - \pi\gamma H)h + \left[\pi(\alpha_d(1-t) - \alpha_0) - \frac{1-s}{2}\right]h^2 - T. \qquad (1)$$

The government maximizes an objective function, G, which differs from c in three ways. First, the government internalizes the education externality γH. Second, emigrants' weight in G is $1-\beta$, rather than 1 (as in equation (1)). Third, given budget-neutrality, the education subsidy, Bhagwati tax and lump-sum amount T do not enter G. Thus, $G = (1-\pi h)(\alpha_0 + \gamma)\,h + (\pi h)\alpha_d(1-\beta)h - \frac{h^2}{2}$, or:

$$G = (\alpha_0 + \gamma)h + \left[\pi(\alpha_d(1-\beta) - \alpha_0 - \gamma) - \frac{1}{2}\right]h^2. \qquad (2)$$

Equations (1) and (2) constitute the basis for the analysis that follows.

[5] For simplicity, I assume migration is not sufficiently large to generate externalities in the host country.

3. Education Subsidy

This section focuses on the education subsidy and abstracts from the Bhagwati tax, which is examined in Section 4. Section 3.1 examines the issue of optimal subsidy under a closed economy and Section 3.2 does so under an open economy.

3.1. Closed Economy

Under a closed economy, $\pi = 0$. In the absence of intervention, (1) becomes $c = \alpha_0 h + \gamma H - \frac{h^2}{2}$. Denoting closed-economy variables by subscript "c," solutions for h and c are:

$$h_c = \alpha_0,\ c_c = \alpha_0\left(\frac{\alpha_0}{2} + \gamma\right). \tag{3}$$

The government maximizes (2), which is given by $G = (\alpha_0 + \gamma)h - \frac{h^2}{2}$ in this case. The solutions for h and G are:

$$h_{Gc} = \alpha_0 + \gamma > h_0,\ G_c = \frac{(\alpha_0+\gamma)^2}{2} = c_c + \frac{\gamma^2}{2} > c_c. \tag{4}$$

The optimal intervention is an education subsidy which is determined as follows. With the subsidy, $c = \alpha_0 h + \gamma H - \frac{(1-s)h^2}{2} - T$, h is $h_{sc} = \frac{\alpha_0}{1-s}$. Setting $h_{sc} = h_{Gc}$, solutions for s and c are:

$$s_c = \frac{\gamma}{\alpha_0 + \gamma},\ c_{sc} = G_c. \tag{5}$$

Thus, the subsidy is equal to the output effect of education's externality relative to its total effect.

3.2. Open Economy

In the absence of intervention, equation (1) is $c = \gamma H + (\alpha_0 - \pi\gamma H)h + \left[\pi(\alpha_d - \alpha_0) - \frac{1}{2}\right]h^2$. Denoting variables by subscript "a" in this case and recalling that $H = h$ under homogeneity, the solution is $h_a = \frac{\alpha_0 - \pi\gamma H}{\phi}$, with $\phi = 1 - 2\pi(\alpha_d - \alpha_0)$. Given that $H = h$, we have:

$$h_a = \frac{\alpha_0}{\phi_a} > h_c, c_a = \frac{\alpha_0}{\phi_a}\left[\frac{\alpha_0}{2} + \gamma\left(1 - \frac{p_a}{2}\right)\right] \gtrless c_c,\ \phi_a = 1 - 2\pi\left(\alpha_d - \alpha_0 - \frac{\gamma}{2}\right) > 0.^{6} \tag{6}$$

[6] $\phi_a > 0$ because $\phi_a = \phi + \pi\gamma$, and $\phi = 1 - 2\pi(\alpha_d - \alpha_0) > 0$ is the second-order condition for a maximum.

Thus, a brain drain has a positive (ambiguous) impact on education (welfare) in the absence of intervention.

With an open economy and equal weights for residents and emigrants, $G = (\alpha_0 + \gamma)h + \left[\pi(\alpha_d - \alpha_0 - \gamma) - \frac{1}{2}\right]h^2$. Solutions for h and G are:

$$h_{Ga} = \frac{\alpha_0+\gamma}{\phi_{Ga}} > h_{Gc},\ G_a = \frac{(\alpha_0+\gamma)^2}{2\phi_{Ga}} > G_c,\ \phi_{Ga} = 1 - 2\pi(\alpha_d - \alpha_0 - \gamma), \quad (7)$$

where $\phi_{Ga} > 0$ is the second-order condition for a maximum.

Thus, optimal education and welfare are greater under an open than under a closed economy. [7]

The government can raise h_a to the social optimum, h_{Ga}, by subsidizing education at the rate s_a. Then, from (1), $h_{sa} = \frac{\alpha_0}{\phi_{sa}}$, $\phi_{sa} = 1 - s_a - 2\pi\left(\alpha_d - \alpha_0 - \frac{\gamma}{2}\right) = \phi_{Ga} - s_a - \pi\gamma$.

Setting $h_{sa} = h_{Ga}$, or $\frac{\alpha_0}{\phi_{sa}} = \frac{\alpha_0+\gamma}{\phi_{Ga}}$, we have:

$$s_a = \left(\frac{\gamma}{\alpha_0+\gamma}\right)\phi_{Ga} - \pi\gamma > 0,^{8}\ c_{sa} = G_a. \quad (8)$$

From (5), $s_c = \frac{\gamma}{\alpha_0+\gamma}$. Thus, $s_a = s_c - \left[\frac{\gamma}{\alpha_0+\gamma}(1 - \phi_{Ga}) + \pi\gamma\right] < s_c$, i.e., the optimal subsidy is smaller under an open than under a closed economy. The reason is that the source country's entire native population benefits from the externality under a closed economy but not under an open one. In the latter case, the externality benefits are limited to the resident population and are lost for the emigrants. The result that $s_a < s_c$ has important implications for the Bhagwati tax.

4. Bhagwati Tax

Section 4.1 (4.2) assumes migrants' weight in the government's objective function is equal to (smaller than) that for residents.

[7] This holds for the population as a whole, including the emigrants. On the other hand, source country's residents are worse off under an open than a closed economy (Schiff 2018).

[8] Since $p_{Ga} = \pi h_{Ga} = \frac{\pi(\alpha_0+\gamma)}{\phi_{Ga}}$, we have $s_a = \left(\frac{\gamma}{\alpha_0+\gamma}\right)\phi_{Ga} - \pi\gamma = \left(\frac{\gamma}{\alpha_0+\gamma}\right)\phi_{Ga}(1 - p_{Ga}) > 0$.

4.1. Equal Weights for Residents and Migrants

Assume now that the government has an additional policy instrument, namely the Bhagwati tax, which consists of a tax rate, t, levied on the income $y_d = \alpha_d h$ earned in the host country, i.e., the tax is equal to $t\alpha_d h$.

In this case, c is given by equation (1) and the solution for h is:

$$h_t = \frac{\alpha_0}{\phi_t},\ \phi_t = 1 - s_t - 2\pi\left[\alpha_d(1-t) - \alpha_0 - \frac{\gamma}{2}\right]. \quad (9)$$

Setting $h_t = h_{Ga}$, i.e., $\frac{\alpha_0}{\phi_t} = \frac{\alpha_0+\gamma}{\phi_{Ga}}$ [see (7)], and noting that $\phi_t = \phi_{Ga} + 2\pi\alpha_d t - s_t - \pi\gamma$, it follows that the relationship between the optimal values of s_t and t is:

$$s_t - 2\pi\alpha_d t = \left(\frac{\gamma}{\alpha_0+\gamma}\right)\phi_{Ga} - \pi\gamma = s_a > 0. \quad (10)$$

Equation (10) shows that the optimal education subsidy and the optimal Bhagwati tax are 'policy complements' in the sense that an increase in either implies an increase in the other, with $\frac{\partial s_t}{\partial t} = 2\pi\alpha_d > 0$. From (10), $t = \frac{s_t - s_a}{2\pi\alpha_d} > (<)\ 0 \Leftrightarrow s_t > (<)\ s_a$. In other words, a subsidy s_t that is larger (smaller) than s_a – the optimal subsidy in the absence of the tax [see (8)] – implies that t represents a tax (subsidy).

Under a closed economy, the optimal subsidy is $s_c = \frac{\gamma}{\alpha_0 + \gamma}$, while the optimal subsidy under an open economy when $t = 0$ is $s_a = \left(\frac{\gamma}{\alpha_0+\gamma}\right)\phi_{Ga} - \pi\gamma < s_c$. A possible solution when opening up the economy is to reduce the subsidy from s_c to s_a. However, doing so may be politically difficult if not impossible in the case where pressure is exercised by parents' and teachers' organizations to maintain the subsidy level at s_c, and it may be easier to levy a tax on skilled emigrants. This is especially likely if emigrants' weight in the government's objective function is smaller than residents' weight. I turn to this issue in Section 4.2. In the present case (where $s_t = s_c$), the optimal Bhagwati tax is $t = \frac{s_c - s_a}{2\pi\alpha_d} = \frac{1}{2\pi\alpha_d}\left[\left(\frac{\gamma}{\alpha_0+\gamma}\right)(1-\phi_{Ga}) + \pi\gamma\right] > 0$.

4.2. Smaller Migrant than Resident Weights

The resident population's well-being is likely to matter more to the government than that of emigrants. The government's effectiveness is likely to be greater regarding its impact on residents' welfare than on emigrants' welfare. And if residents are dissatisfied with the government's performance, they can voice their dissatisfaction and pressure the government through various means, many of which are not available to emigrants, including voting (which emigrants from some 70 developing source countries cannot do, including important ones such as India and the Philippines), demonstrations, strikes, civil disobedience, and even violent action.

Thus, assume the weight of emigrants in the government's objective function G is equal to $1-\beta$, $\beta \epsilon [0,1]$, and that of residents is 1. Then G is given by equation (2) and the solution is:

$$h_{G\beta} = \frac{\alpha_0+\gamma}{\phi_{G\beta}} < h_{Ga},\ G_\beta = \frac{(\alpha_0+\gamma)^2}{2\phi_{G\beta}} < G_a,\ \phi_{G\beta} = 1 - 2\pi[(1-\beta)\alpha_d - \alpha_0 - \gamma], \qquad (11)$$

with $\phi_{G\beta} = \phi_{Ga} + 2\pi\beta\alpha_d > \phi_{Ga}$ the reason for the inequalities in (11), and h_{Ga}, G_a given in (7).

Comparing solutions for h and G in (11) with those for the closed economy (given in (7)), we have: $1-\beta \gtrless \frac{\alpha_0+\gamma}{\alpha_d} \Leftrightarrow \phi_{G\beta} \lesseqgtr 1 \Leftrightarrow h_{G\beta} \gtrless h_{Gc}$, and $1-\beta \gtrless \frac{\alpha_0+\gamma}{\alpha_d} \Leftrightarrow G_\beta \gtrless G_c$. Thus, whether education and welfare are higher or lower in this case than under a closed economy is ambiguous. In the case where the government only takes residents' welfare into account ($\beta = 1$), $\phi_{G\beta} = 1 + 2\pi(\alpha_0+\gamma) > 1$, so that $h_{G\beta} < h_{Gc}$ and $G_\beta < G_c$.[9]

From (6), the private solution for $c = (\alpha_0 - \pi\gamma H)h + \gamma H + \left[\pi(\alpha_d - \alpha_0) - \frac{1-s}{2}\right]h^2 - T$ is $h_{sa} = \frac{\alpha_0}{\phi_{sa}}$, where $\phi_{sa} = 1 - s - 2\pi\left(\alpha_d - \alpha_0 - \frac{\gamma}{2}\right)$. Setting $h_{sa} = h_{G\beta}$, and noting that $\phi_{sa} = \phi_{G\beta} - s - 2\pi\beta\alpha_d - \pi\gamma$, the optimal subsidy is:

$$s_\beta = \left(\frac{\gamma}{\alpha_0+\gamma}\right)\phi_{G\beta} - 2\pi\beta\alpha_d - \pi\gamma. \qquad (12)$$

[9] The opposite holds for $\beta = 0$ (see Section 3.2).

As noted above, $\phi_{G\beta} = \phi_{Ga} + 2\pi\beta\alpha_d$, so that $s_\beta = \left(\frac{\gamma}{\alpha_0+\gamma}\right)\phi_{Ga} - 2\pi\beta\alpha_d\left(\frac{\alpha_0}{\alpha_0+\gamma}\right) - \pi\gamma = s_a - 2\pi\beta\alpha_d\left(\frac{\alpha_0}{\alpha_0+\gamma}\right)$. Thus, $s_\beta < s_a$. The optimal subsidy is smaller in this case because part of the native population will emigrate, and since the government values migrants less than residents, subsidizing their education is considered less valuable. Note that the gap $s_a - s_\beta$ is largest for $\beta = 1$, i.e., when migrants' welfare does not enter in the government's objective function.

Assume now the Bhagwati tax is available to the government. Then:

$$s_{t\beta} - 2\pi\alpha_d t_\beta = \left(\frac{\gamma}{\alpha_0+\gamma}\right)\phi_{G\beta} - 2\pi\beta\alpha_d - \pi\gamma = s_\beta.^{10} \quad (13)$$

Since $s_\beta < s_a$, it follows that for any given subsidy level $s_{t\beta} = s_t = s_x$, including for a subsidy fixed at the closed-economy level ($s_x = s_c$), we have: $t_\beta = \frac{s_x - s_\beta}{2\pi\alpha_d} > t = \frac{s_x - s_a}{2\pi\alpha_d} = t_\beta - \frac{\beta\alpha_0}{\alpha_0+\gamma}$. Thus, as expected, the optimal Bhagwati tax under any given education subsidy is higher when the government values emigrants less than residents than when it values them equally.

The early literature was concerned with the impact of the brain drain on source country residents' welfare. In other words, it was concerned with the case where $\beta = 1$, which is precisely the case where $t_\beta = t + \frac{\beta\alpha_0}{\alpha_0+\gamma} = t + \frac{\alpha_0}{\alpha_0+\gamma}$ is largest, i.e., where the Bhagwati tax is highest.

6. Conclusion

This paper developed a welfare-maximization skilled migration model where education generates a positive externality to examine the impact on education and welfare of a change from a closed economy to one open to skilled migration or brain drain, deriving brain drain's impact on education, welfare, the optimal education subsidy, and a combination of the subsidy and the Bhagwati tax, when residents' (emigrants') weight in the government's objective function is 1 ($1 - \beta$).

I found that: *i*) education, welfare and the subsidy are higher (lower) under an open than under a closed economy for any $1 - \beta$ larger (smaller) than the ratio of source-to-host countries' income;

[10] Derivation of this result is similar to that of equation (10).

ii) the subsidy and the tax are 'policy complements,' i.e., they are positively related; and *iii*) the tax increases with β and reaches a maximum at $\beta = 1$. These findings led to two implications and a proposal: 1) The early literature focused on resident and not on migrant welfare (where $\beta = 1$), which is precisely where the tax is highest. 2) A second policy instrument should be useful, especially if there are constraints in making changes in one of them as circumstances change. For instance, opening up the economy implies a lower optimal subsidy, and raising the tax might be beneficial if, say, parents' and teachers' organizations make it politically difficult to lower the subsidy. 3) Finally, a proposal for collecting the tax was presented.

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Appendix. Implementing the Bhagwati Tax

According to Wilson (2007), the original plan was to levy the Bhagwati tax on skilled migrants' income earned in the host countries. Thus, the latter would have to be involved, leading to a number of problems. Wilson (2007) states: "It became apparent that enormous practical difficulties would be encountered in the implementation of such a tax ..." [11] Bhagwati (1979) then proposed that developing countries collect the tax using a "global tax system" such as the US one.

The US is the only country that taxes its non-resident citizens on a lifelong basis, and at the same rate as resident ones.[12] That the US is the only country doing so is no surprise as i) host countries' financial institutions (FI) are willing to provide the US the needed information about US citizens working there, in large part because the US dollar is the world's reserve currency, the country has about a third of the world's financial markets, and FI everywhere need to deal in US dollars and be able to trade in US securities (Lesperance 2016); ii) most of its non-resident citizens prefer to pay the tax than give up their citizenship; and iii) the country has the means to administer such a complex tax system. These conditions are unlikely to prevail in any other country, including developing ones.

[11] In the US, involving the IRS in its collection would likely be unconstitutional as it discriminated against aliens.

[12] Some countries tax emigrants for short periods of time after their departure. Eritrea does levy a special tax on its citizens abroad, though it has done so through extra-legal means. Canada and the Netherlands recently expelled diplomats because of threats of retaliation against emigrants' families back home (Lionel 2017).

I propose two complementary enforcement mechanisms for collecting the Bhagwati tax. The government establishes a policy whereby, in order to start a university education, individuals or their family must sign a contract that stipulates that if they emigrate at some point in the future, they must transfer back a specified share of their income (for a specified period of time). The problem is how to enforce compliance with the terms of the contract.

The first proposal entails agreements with the students' families. An important share of developing countries' university students still comes from relatively well-to-do families and the government would have each student's family sign a contract whereby it would pay the tax if the student emigrated and failed to make the agreed-upon payments, with the family's assets serving as collateral. Under the second proposal,[13] the contract would stipulate that if individuals emigrated at some point after their studies and failed to make the agreed-upon transfers, the source country government could take them to court in the host country. Given that most skilled migrants live in about ten advanced countries, it might be worth examining the feasibility of an agreement on this issue. Once established, the host country government would not have to be directly involved in the execution of the policy.

[13] This proposal is based on a conversation with Çağlar Özden.