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THE BRAIN DRAIN AND EDUCATION OPPORTUNITY IN LESS DEVELOPED COUNTRIES

Michael A. Webb*

Introduction

The international migration of educated workers has been a cause for concern in those countries experiencing considerable emigration for a number of years. Previous analyses, both static and dynamic, focus on the welfare effects of migration or schemes to compensate the migrants' country of origin, under various labor market assumptions. With the exception of a selected few (Bhagwati and Hamada (1974), McCulloch and Yellen (1975) the education process has, seldom been addressed. Their procedure has been to assume the government subsidy to education is exogenously determined.

Here we address the case in which the subsidy level is variable. In particular, we look at how migration and various compensation schemes change a government's decision to subsidize education and the market for educational services. Our principal objective is to examine how these changes alter the rates of education for various income classes in the country of emigration. Thus our concern is similar to that of McCulloch and Yellen (1974) and Rodriguez (1975) who analyze income distributional effects of migration and various compensation schemes in the country of origin in dynamic models, including human capital as a factor of production. Our focus, however, is on the changes in the distribution of educational opportunity resulting from the brain drain and possible compensation schemes.

That a government would respond to the emigration of educated labor is to be expected for a variety of reasons. First, it reduces the effectiveness of education subsidies on the domestic endowment of educated labor. Second, the loss of highly skilled labor may be a concern for "noneconomic" political or sociological reasons. Also, emigration of relatively skilled labor may affect those left behind (Aitken (1968) and Stahl (1982). These include (1) a reduction in the benefit of associating with colleagues for those professionals who do not emigrate; (2) adjustment costs created by skill bottlenecks (44% of Philippine emigrants of the early 1970's, for example, were associated with the nontraded goods sector, especially in the service and construction industries [Gupta, 1973]; (3) the deadweight loss experienced by those, especially perhaps unskilled workers, whose marginal productivity declines directly with a decline in the endowment of highly skilled labor; and (4) a potential decline in consumption of public goods if emigrants tend to provide a greater proportion of tax revenue relative to their consumption of public goods than those left behind. Longer term losses include (1) a decline in the capital-labor ratio if those leaving tend to possess a relatively higher marginal propensity to save and lower population growth rate than nonemigrants, and (2)

*.Department of Economics, University of Kentucky, Lexington, Kentucky 40506. I am grateful to an anonymous referee and G.C. Blomquist for their comments and suggestions.

a potential reduction in those choosing to exercise entrepreneurial and other skills or obtain higher skills due to the negative demonstration effect of emigration.

Do governments alter their education policy in the face of skilled labor migration? According to Berry and Mendez (1976), emigration of skilled labor from Colombia is sufficiently large to induce some change in the government's policy toward education, although they do not consider what the government's response might be. Petrucelli (1979) finds that Uruguay, whose emigrants include 24% of the graduates of the Polytechnic Institute, responds to emigration by increasing education expenditures. That the brain drain may negatively affect the education subsidies of some governments is indicated by the public statement by Israeli Minister of Health Yissrael Barzilai that he was in agreement with Britain's Health Minister Kenneth Robinson in not being prepared to "...invest thousands of pounds sterling in a medical student only to increase the membership of the American Medical Association" (Margulies and Block, 1969). As education is costly, emigration and subsequent changes in the government subsidy to education alter education decisions.

In the next section we build a model of an economy consisting of cash-abundant and cash-constrained families whose members become unskilled laborers or undertake education and enter the market for skilled labor. The third section addresses the government's response to emigration and analyzes the effects of emigration and the government's reaction on the level and distribution of acquiring education. We thus assume the government possesses an objective concerning the endowment of educated labor. We consider the alternative cases in which the government (1) possesses a set target domestic endowment of educated labor, typically assumed in analyses of "noneconomic objectives" in the literature, and (2) accounts for the opportunity cost of funds used to subsidize education.

From these, we delineate government responses as Type I or Type II. The Uruguayan response is an example of the first case, while the second may be represented by the above quote of an Israeli official. The characteristics of countries likely to undertake one response or the other, are further addressed in the last section, along with implications of the responses. The implications of various proposed compensation schemes are considered in section four.

The Model

Consider a developing country with educated and uneducated labor, which is experiencing the emigration of educated labor. The education process is costly, but unlike previous studies, the cost is not assumed to be entirely borne either by government or the individual being educated. Two types of individuals are assumed to decide whether or not to go through the education process. Those from cash-abundant families decide according to the private rate of return to education. Their decisions thus depend on both the cost of education and relative wage of educated labor. The number of individuals from cash-constrained families who choose to be educated is restricted by their family cash constraints, assuming that educational loans are not forthcoming from an imperfect financial market. The effective supply of cash-constrained family entrants choosing education is therefore solely a function of the private cost of education.¹

¹The division of entrants to the labor market into cash-constrained and cash-abundant family classes is obviously a simplification of a situation which might exist in LDC's, but captures the essence of the differences in wealth, and thus in patterns of decisionmaking,

Labor Supply

Individuals entering the labor market are divided into four categories, depending on their origin in one of the two family classes and on whether they are educated or uneducated. The quantity of those in each category is given by x_j^i , where the subscript refers to the family class of origin, $j = 1$ indicating labor of cash-abundant family origin, and $j = 2$ indicating labor of cash-constrained family origin. The superscript refers to labor type, with $i = 1$ referring to educated labor and $i = 2$ to labor which is not educated. It is assumed both classes of persons become fully employed, entering the market for uneducated labor directly or the market for educated labor via the education process. Any unemployment of skilled labor is assumed to be temporary.

The labor supply relations for each of these categories are written

$$\begin{aligned} x_1^i & (w^1, w^2, g, x_2^1) & i = 1, 2 \\ x_2^i & (g, x_1^1) & i = 1, 2 \end{aligned}$$

The first two supply relations x_j^i are for cash-abundant family members, being determined by wages offered in the markets, w^i , as well as by the level of the government's subsidy to education, g . Each supply is also affected by the supply of other labor to the education process due to any private (exclusive) elements of the education subsidy. The supplies of cash-constrained family members are determined by the size of the government's subsidy level and number of cash-abundant family members being educated. Note that the supplies of the two classes are interdependent. We assume the relations are used to determine the well defined functions $x_1^i(w^1, w^2, g)$, $i = 1, 2$. The set of relations $x_2^i(g, x_1^1)$, $i = 1, 2$, are also assumed to be well defined functions. Thus:

$$\begin{aligned} \partial x_j^i / \partial g & > 0 & i, j = 1, 2 \\ \partial x_1^i / \partial w^k & \begin{cases} > 0 & i = k \\ < 0 & i \neq k \end{cases} & i, k = 1, 2 \\ \partial x_2^i / \partial x_1^1 & \begin{cases} > 0 & i = 2 \\ < 0 & i = 1 \end{cases} & i, k = 1, 2 \end{aligned} \quad (1)$$

Labor Demand and Equilibrium

The industry demands for the two types of labor are functions of wages in the two markets, $z^i(w^1, w^2)$, where

$$\partial z^i / \partial w^j \begin{cases} > 0 & i \neq j \\ < 0 & i = j. \end{cases}$$

Migration of educated labor is a function of the domestic wage for such labor, $z(\alpha, w^1)$

$= z(\alpha, w^1)$ where $\partial z / \partial w^1 = \alpha \partial m / \partial w^1 < 0$, i.e., an increase in the domestic wage to skilled labor reduces the incentive to migrate, and α is a shift variable such that $\partial z / \partial \alpha = m(w^1) > 0$.

We thus have two labor market equilibrium equations,

$$\begin{aligned} x_1^1(w^1, w^2, g, \alpha) + x_2^1(g, x_1^1) &= \ell^1(w^1, w^2) + z(\alpha, w^1) \\ x_1^2(w^1, w^2, g, \alpha) + x_2^2(g, x_1^1) &= \ell^2(w^1, w^2) \end{aligned} \quad (2)$$

As these two equations are redundant, the first equation alone is used to determine equilibrium, with the wage in the market for uneducated labor, w^2 , used as the numeraire. Our system's equilibrium equation becomes

$$x_1^1(w, g) + x_2^1(g, x_1^1) = \ell^1(w) + z(\alpha, w) \quad (3)$$

with $w \equiv w^1/w^2$.

Effects of Changes in Subsidization

We use the implicit function theorem and (3) to obtain $\tilde{w}(g, \alpha)$, with

$$\frac{\partial \tilde{w}}{\partial g} = - \frac{\frac{\partial x_1^1}{\partial g} + \frac{\partial x_2^1}{\partial g} + \frac{\partial x_2^1}{\partial x_1^1} \frac{\partial x_1^1}{\partial g}}{\frac{\partial x_1^1}{\partial w} + \frac{\partial x_2^1}{\partial x_1^1} \frac{\partial x_1^1}{\partial w} - \frac{\partial \ell^1}{\partial w} - \frac{\partial z}{\partial w}} \quad (4)$$

The denominator is simply the change in excess supply of educated labor resulting from a change in its wage, which we assume is positive. From (1) and (2), and the fact that the government subsidy possesses a public element, the numerator is positive and (4) is thus negative. An increase in the government's subsidy to education results in a decline in real wage of educated labor, an outcome one would certainly expect. Similarly, we obtain $\partial \tilde{w} / \partial \alpha > 0$. We also have, then $\tilde{\ell}^1(g, \alpha) \equiv \ell^1(w(g, \alpha))$, with $\partial \tilde{\ell}^1 / \partial g > 0$ and $\partial \tilde{\ell}^1 / \partial \alpha < 0$.

Consider next the net effect of a change in the education subsidy on the numbers of persons from each class who become educated; this effect depends on the wage change resulting from the subsidy increase. The change in supply of cash-abundant family members who choose to be educated if the subsidy is marginally altered is

$$dx_1^1/dg = \frac{\partial x_1^1}{\partial g} + \frac{\partial x_1^1}{\partial w} \frac{\partial \tilde{w}}{\partial g}. \quad (5)$$

While the first term on the right hand side of (5) is positive, the second term is ambiguous. A fall in the wage of educated labor, according to (4), reduces the number of cash-abundant family members choosing education. Thus, the net effect on number of cash-abundant family entrants choosing education may increase or decline.

The change in supply from cash constrained families is

$$dx_1^1/dg = \frac{\partial x_1^1}{\partial g} + \frac{\partial x_1^1}{\partial w} \frac{\partial \tilde{w}}{\partial g}. \quad (6)$$

Assuming the subsidy is administered in a sufficiently unbiased manner and that abilities and desires are distributed in sufficiently similar fashion in the two classes, the direct effect of an increase in the subsidy is a greater percentage rise in the number from the cash-constrained family class choosing education. This is because more members of cash-abundant families are educated initially, in consequence of their less cash constrained status. The absolute numbers being educated may increase for both classes, but will be greater, of course, for the larger class of cash-constrained families. Substituting (5) into (6), we obtain

$$dx_2^1/dg = \frac{\partial x_2^1}{\partial g} + \frac{\partial x_2^1}{\partial x_1^1} \frac{\partial x_1^1}{\partial g} + \frac{\partial x_2^1}{\partial x_1^1} \frac{\partial x_1^1}{\partial w} \frac{\partial \tilde{w}}{\partial g}. \quad (7)$$

The sum of the first two terms is positive, and measures the direct effect of a change in the subsidy, the second accounting for the exclusive element of the subsidy. The indirect effect, measured by the third term of (7), reinforces the positive direct effect of the subsidy increase. In absolute and percentage terms, this exceeds any increase in the number of persons from cash-abundant families who choose education.

It is obvious that both local employment and migration increase as the local wage of educated labor decreases as the education subsidy rises. These impacts determine the effects of decisions made by government officials in the presence of emigration. The net effect of the presence of emigration and the government's response to it on absolute and relative rates of education are addressed in the following section.

The Education Effects of Emigration

To determine the net effect of the brain drain, government's response to the movement of educated labor must first be characterized. As previously noted, there are two possible responses. Government may be target minded, ignoring the effect of migration or the effectiveness of the education subsidy and focusing exclusively on a predetermined target employment of educated labor domestically. Alternatively, government may have a "neoclassical" mind-set and weigh and the effects of emigration on both the effectiveness of education subsidies on the domestic supply of educated labor and on its marginal value.

The Neoclassical-Minded Government: Case I

First consider what we call the "neoclassical" minded government; it maximizes a continuous, smooth, concave and separable government objective function,

$$V[\tilde{\ell}^1(g), R(g)]$$

where R represents the government's revenues after the subsidization of education. The government objective function is predicated on two arguments; the number of educated laborers employed domestically and the value of government revenue which might be spent in a variety of other projects (including a tax refund).

Maximizing the value of its objective function, the government determines the optimal subsidy, g^* , so that

$$\frac{\partial V}{\partial \tilde{\ell}^1} \frac{\partial \tilde{\ell}^1}{\partial g} = - \frac{\partial V}{\partial R} \frac{\partial R}{\partial g} = \frac{\partial V}{\partial R} \quad (8)$$

with $\partial R/\partial g = -1$.

We are especially interested in the sign of

$$d(\partial V/\partial g)/d\alpha = \partial^2 V/\partial \bar{x}^1 \partial \bar{x}^1/\partial g \partial \bar{x}^1/\partial \alpha + \partial V/\partial \bar{x}^1 \partial^2 \bar{x}^1/\partial g \partial \alpha. \quad (9)$$

Using (4), we find

$$\begin{aligned} \partial^2 \bar{x}^1/\partial g \partial \alpha &= \partial \bar{x}^1/\partial w \partial^2 w/\partial g \partial \alpha = \\ & \frac{\partial \bar{x}^1/\partial w (\partial x_1^1/\partial g + \partial x_2^1/\partial g + \partial x_2^1/\partial x_1^1 \partial x_1^1/\partial g) \partial w/\partial \alpha}{(\partial x_1^1/\partial w + \partial x_2^1/\partial x_1^1 \partial x_1^1/\partial w - \partial \bar{x}^1/\partial w - \partial x_1^1/\partial w)^2} < 0. \end{aligned} \quad (10)$$

Shifting up the migration function, i.e., increasing α , reduces the effect of the education subsidy on home employment of skilled labor. Thus the second term of equation (9) is negative, reflecting the increasing expense of producing skilled labor for domestically employed. On the other hand, the first term of (9) is positive; it measures the change which emigration causes in marginal value of domestically employed educated labor.

Assuming the change in marginal value of domestically employed educated labor as a result of emigration is sufficiently limited, the government subsidy is reduced due to the overwhelming effect of increased emigration on the efficiency of the education subsidy. We refer to this as Case I, in which the function $g(\alpha)$ with $\partial g/\partial \alpha < 0$. If the marginal values rise sufficiently with emigration (i.e., the marginal value of increasing educated labor is sufficiently declining), the subsidy is increased; this situation and the qualitatively identical Case II, in which government is "target minded", is considered later.

A reduction in the subsidy reduces the number choosing education and being employed in the home market, which increases the wage for educated labor. From our previous discussion, we know the change in number of cash-abundant family individuals seeking education is unknown, while the number of cash-constrained family members choosing education will fall.

Both the direct effect and the subsidy-reducing effect of migration causes a reduction in the number of cash-constrained family entrants who become educated while also increasing the inequality in rates of education between the two family classes. The number of cash-abundant family entrants choosing education increases if

$$dx_1^1/d\alpha = \partial x_1^1/\partial w \partial \bar{w}/\partial \alpha + \partial x_1^1/\partial g \partial \bar{g}/\partial \alpha + \partial x_1^1/\partial w \partial \bar{w}/\partial g \partial \bar{g}/\partial \alpha > 0, \quad (11)$$

that is, if

$$\eta_{x_1^1}^w/\eta_{x_1^1}^g > -\eta_g^w/\eta_w^g$$

where $\eta_y^v \equiv \partial y/\partial v \cdot v/y$.

(12)

The elasticities in (12) are all positive except η_g^w . On the left hand side of the inequality is the ratio of the elasticity of cash-abundant family supply to education with respect to wages to the elasticity of that supply with respect to the education subsidy. Since the subsidy does not serve to ease cash constraint for cash-abundant families, a discount rate which is not too large guarantees that the left hand side of (12) will exceed unity.

The right hand side of (12) represents the ratio of the percentage change in the subsidy to the percentage change in the wages of educated labor occurring with increased migration. If the demand for educated labor is sufficiently inelastic (as evidenced by a sufficiently large denominator), this ratio may be presumed to be relatively small. As noted by Bhagwati and Hamada (1974), an inelastic demand for educated labor is likely to occur in less developed countries, so that the condition (12) is likely to be satisfied.

Condition (12) does not include the effect on those who choose education planning to emigrate to the foreign market. The expected wage of obtaining an education for those individuals rises with an increase in the migration rate. The inclusion of this impact strengthens the presumption that migration leads to increased education of cash-abundant family entrants, while reducing the number of cash-constrained family persons obtaining education.

Case II

Now consider the case of a "target minded" government. It sets its education subsidy in order to obtain a predetermined target, \bar{x}^1 , of educated labor employed in the domestic economy, i.e., it determines g' so that $\bar{x}^1(g', \alpha) = \bar{x}^1$. It increases the subsidy to education in response to the migration of educated labor.

Increased subsidization boosts the number of entrants choosing education so that the domestic endowment of educated labor, and thus its wages, remain unchanged. Assuming the cash-constrained family decision is more subsidy-elastic than the cash-abundant family decision, the number of cash-constrained family persons choosing education as a direct result of the increased subsidization increases by a greater percentage than does the change in number of cash-abundant family members choosing to be educated. To the extent that cash-abundant family members consider emigrating, their expected wage increases affect their education decision. Only if a sufficient number of entrants from cash abundant families consider migration, but fail actually to go, would the number of cash-constrained family members being educated decline.

Our conclusion is that the effect of the brain drain or a rise in its magnitude results in either (i) less education undertaken by members of cash-constrained family, with an unknown, but likely positive, change in the number of cash-abundant family members obtaining an education (Case I) or (ii) presumably more education undertaken as a whole and by members of cash-abundant families, with an unknown change, though likely an increase, in education obtained by those from cash-constrained families (Case II). Relative rates of education for individuals of the two classes diverge in the first case, converging in the second.

In addition to determining the effect of a brain drain and the government's subsequent reaction to it on both the aggregate level of learning and its distribution, we may wish to consider the implications of compensation schemes which have been suggested by various economists and policy-makers [especially see Bhagwati (1976), also Bhagwati and Dellalifar (1973), Hamada (1978), Bhagwati and Hamada (1982), and Wilson

(1982)].

The Effects of Three Migration Compensating Schemes

We consider the impacts of three proposals for compensating the country of origin for the emigration of its skilled labor. The three proposals are: (1) each emigrant pays a lump sum of cash to the government at the time of departure; (2) each emigrant makes a series of payments to the government over some time period after departure; and (3) the country of destination pays compensation to the government for each migrant, either in a lump sum amount or over some specified time period.²

Consider first the scheme in which a lump sum payment is required from the migrant at the time of departure. Fewer cash-abundant family individuals migrate; none of the cash-constrained family class do so. Wages in the market for educated labor fall, compounding the direct effect of the required compensation on expected wages (for those considering emigration) in reducing the number of cash-abundant family individuals undertaking education. This reduction in cash-abundant family members being educated is partially offset by a simultaneous increase in cash-constrained family members choosing education.

In Case I, fewer educated laborers migrate, increasing efficiency of education subsidization i.e., increasing the term $\partial \bar{L} / \partial g$ of (8). Assuming the compensation is viewed as a return to subsidization of education, it offsets the cost of subsidization, or similarly, increases its effectiveness resulting in the addition of the term $(\partial V / \partial R \partial R / \partial z \partial z / \partial w \partial \bar{w} / \partial g)$ to the left hand side of (8). At the initial value of the subsidy, g , the left hand side of (8) expands, and the government under Case I raises the subsidy. The cash-abundant family class may supply more or fewer individuals to the education process; a sufficient condition for fewer to be educated is given by (12). More cash-constrained family members enter the education process; the percentage increase exceeds the percentage increase, if there is one, of cash-abundant family individuals choosing to be educated.

In Case II (with a target-minded government) this compensation scheme, by reducing the flow of emigrants, initially increases the domestic supply of educated workers, leading the government to reduce its education subsidy until the domestic supply returns to its original level. The subsidy reduction directly cuts the number of persons of both classes being educated. The net result is a decline in the number being educated from both family classes, the percentage decline being greater for those from cash-constrained families. This may be somewhat offset by the fall in expected wage for those considering emigration when deciding whether to undertake education, resulting in a further decline in cash-abundant family members being educated.

Now suppose the second scheme is adopted, the tax being paid by emigrants over some period of time after emigration. If the discounted amount paid in this scheme is the same as in the latter, the sole difference is that in this case educated members of

²The income effect the government experiences from revenues of the three compensation plans is not considered in this paper, and is relevant only under Case I. Assuming the endowment of educated labor is not an inferior argument in the government's objective function, inclusion of the income effect would simply strengthen results obtained here.

cash-constrained families are able to emigrate. This scheme reduces migration to a lesser extent; the effects are qualitatively the same but are quantitatively less than in the case where lump-sum compensation is required. The only qualitative change is the increase in the equality of opportunity to emigrate among those who become educated.

The third compensation scheme calls for a payment from the country of destination to the country of origin. The education opportunities remain unchanged when the government is target-minded. Otherwise, the payment simply results in an effective increase in efficiency of subsidization i.e., the addition of the term $(\partial V / \partial R \partial R / \partial z \partial z / \partial w \partial \bar{w} / \partial g)$ to the left hand side of (12). The government increases the subsidy and the results under Case I are qualitatively the same as under the second compensation scheme. The sole difference is that the proportion of educated persons choosing to emigrate is larger and thus other effects of implementing the scheme are correspondingly smaller.

Conclusions and Extensions

In summary, the net effect of emigration and various compensation schemes on economic opportunity depend largely on whether the government's response is dominated by the effect of emigration on the efficiency of its education subsidy in yielding a certain level in that endowment, as represented by our Case I or its endowment of educated labor, as in Case II. Under Case I, emigration leads to a reduction in cash-constrained family members being educated and presumably to more cash abundant family members obtaining an education; if the number from cash-abundant families choosing to be educated does decline, it will fall less, in percentage and absolute terms, than the fall in the number from cash constrained families being educated. Any of the compensation schemes reviewed here reduce the inequality in rates of obtaining an education which exist because of emigration by reducing emigration under two of the schemes and by compensating the government for its efforts in all three cases. In Case II, emigration is likely to lead to a rise in education of members of both classes and to a convergence in their rates of education. Two of the compensation schemes considered here tend to mitigate these effects by reducing emigration.

We presume that the first case refers to countries with relatively large endowments of educated labor. In this light, the response to migration of a country such as Israel, implied in the statement made by an Israeli minister at the first of this paper, is not unexpected. Our second case is expected to occur when the endowment of educated labor is relatively small, especially where the brain drain leads to certain bottlenecks in an economy. The Uruguayan response indicates that it fits in our Case II. The responses of many African nations are also likely to correspond to our second case, so that migration increases their levels of subsidization. Countries endowed with relatively fewer educated laborers are predicted to increase education expenditures, increasing the equality of opportunity to obtain an education. Those countries enjoying a sufficiently large endowment of such labor may be expected to reduce expenditures, reducing the equality of opportunity. Compensation schemes, as mentioned, are generally expected to mitigate these results of the brain drain.

An additional response of the government may be to enact a variety of policies to attract capital to the country. Attracting suitable capital and technology may raise the wages of desirable but mobile educated laborers and subsequently increase the number of those choosing to both undertake education and stay. Note that this solution raises the absolute number of those from cash-abundant families choosing to be educated and thus reduces the number of cash constrained family members being educated, thus increasing the inequality in rates of education of the two classes (at least in the short run).

These outcomes may be extended to the case in which there are a variety of skilled professions requiring different types of education. Consider the effect of emigration under Case I. In general, one would expect a reduction in subsidization in all education, with the reduction being greater in high-emigration fields and falling in severity in fields with consecutively lower rates of migration. Such a result would be upset by any difference in substitution between the professions in the domestic and foreign labor markets. In particular, if a greater substitutability between two professions exists in the domestic labor market than in the foreign market, the reduction in educational subsidy to the higher emigration profession will be greater than otherwise expected, while the lower-emigration profession will experience less of a subsidy reduction, and its subsidy may in fact increase.

Thus, extension of the analysis to the case in which a variety of skill levels exists allows consideration of another potential response of the government to emigration. In particular, the existence of emigration is likely to yield a rise in the subsidization of education for low-emigration professions which act as imperfect substitutes for high-emigration professions. This reorientation, for example, may involve increased subsidization of individuals for specific needs of the home economy. Lower skilled, and hence less mobile, professionals may adequately satisfy the goals of the government in many cases. In this case, cash-constrained family members increasingly undertake education in lower emigration, and thus likely lower skill, professions and engage in less education in the high-emigration, and likely higher skilled, professions. More members of cash-abundant families choose to be educated in high-emigration professions and fewer in the low-emigration professions; the total number of those from these families being educated may rise or fall.

Implementation of one of the three potential compensation schemes addressed here would result in a rise in education subsidies to those professions with higher emigration rates. Increased subsidization for the education of more highly skilled and thus more mobile laborers would follow the implementation of one of these schemes, subsequently altering the distribution of learning in the country predictably.

Lastly, consider the case in which individuals educated in a more developed country are considered as obtaining a higher quality education than those being educated in the same field in the home country. They may therefore be perceived as providing a different type of labor. Assuming the emigration rate is significantly greater for those individuals being educated abroad, a simple extension of this model will predict more or less subsidization for education overseas, depending on the substitutability between domestic-educated and foreign-educated labor and the nature of the government's response.

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