Foreign Aid, International Migration and Welfare

by

Slobodan Djajić

The Graduate Institute of International Studies

132 rue de Lausanne, CH-1211 Geneva, Switzerland

Email: **djajic@hei.unige.ch** tel: 0041 22 7885958

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Abstract

This paper examines the effects of foreign aid on emigration and welfare of the remaining residents in an economy producing traded and non-traded goods. There are three distinct types of households: the rich, the poor, and the relatives of emigrants. Donor country's aid is provided to discourage the poor from emigrating. The extent to which it achieves this objective is shown to be an important factor determining the welfare implications of aid for every type of household residing in the economy. The paper also considers the impact of foreign aid on remittance flows and total foreign exchange earnings of the recipient country.

1.   **Introduction**

Suppose that foreign aid is provided by an advanced donor country only to the non-migrating poor households of a developing country. How does it affect their welfare, as well as the welfare of other households in the recipient country? How does it affect international migration and the flow of remittances? Does it have a positive or a negative impact on the overall foreign-exchange earnings of the recipient country? These are some of the key questions facing the developing economies that depend very heavily on both foreign aid and migrants' remittances as major sources of income and foreign exchange. From the point of view of the advanced donor countries, it is also important to understand the nature of the relationship among foreign aid, welfare, and migration flows, particularly at this time of heightened concern over unwanted immigration from the developing countries.[1]

The present study addresses these issues in the context of a simple model of foreign aid and international migration. The aid-receiving economy produces traded and non-traded goods with the aid of capital and labor. The model is therefore very similar to that originally employed by Rivera-Batiz (1982), and subsequently by Djajić (1986, 1998), Kirwan and Holden (1986), Quibria (1996), Rivera-Batiz (1986), and Thompson (1984), among others, in their study of the impact of emigration and remittances on the welfare of the source country. In the present version of this model, there are rich and poor households. Each household possesses one unit of labor, but the rich households

[1]There exist very few theoretical studies on the links between foreign aid to households and international migration. The pioneering work of Gaytan-Fregoso and Lahiri (2000) examines the impact of aid on illegal immigration, while the recent paper by Hatzipanayotou and Michael (2006) looks at the welfare implications of foreign aid designed to discourage migrants from coming to the donor country where they are eligible for social benefits.

own more capital than do the poor. Some of the workers from the poor households migrate to the advanced, donor country, participate in its relatively more lucrative labor market and send remittances back to their relatives in the recipient country. Others choose not to migrate.

If the donor country offers foreign aid in the form of income transfers to the poor household heads who do not migrate, will a flow of such transfers have a positive or negative impact on the welfare of the different types of households in the recipient country: the poor, the rich, and the remaining relatives of migrants working abroad? It is shown that the direct beneficiaries of aid do enjoy an improvement in welfare. The direct effect of aid on their income is found to outweigh any potential deterioration in their terms of trade in factor and commodity markets. The impact of the aid program on the welfare of other households depends, however, on the effectiveness of aid in discouraging emigration from the recipient country.

The remainder of the paper is organised as follows. Section 2 presents the model and examines the welfare implications of aid to non-migrating poor when international migration is taken to be exogenous. Section 3 conducts the same exercise in the more general setting where migration flows are responsive to the targeted aid transfers. Section 4 looks at the impact of aid on the stock of migrants, the implied remittance flows and total foreign-exchange earnings of the recipient country within a general-equilibrium framework of analysis. Finally, Section 5 summarizes the main results of the paper.

2.   **Foreign Aid and Welfare of the Rich and the Poor**

Consider a world consisting of an advanced donor country and a less developed recipient country. The recipient country consists of X+Y households which may be classified into two groups: the rich (Y) and the poor (X), each group being

homogeneous. Every household is assumed to possess one unit of labor. The rich households, however, have k^y units of capital, while the poor own only k^x ($<k^y$) units. The two groups interact with each other in both the factor and commodity markets. Two types of goods are produced, traded (T), which we take to be the numeraire, and an internationally non-traded good (N), whose price is given by P. Both goods are produced with the aid of capital and labor under perfect competition and constant returns to scale. We shall follow the convention of assuming that T is capital intensive in relation to N. For simplicity of exposition, we shall also assume that all households have identical, homothetic preferences.

Wages in the advanced, donor country, w*, exceed the wages of the recipient country, w. While we assume that w* is fixed, there is perfect wage flexibility and full employment of labor in the recipient country. Of the poor household heads, a number M are assumed to migrate to the donor country. They take the household's unit labor endowment abroad, while leaving their families and capital behind. As a result, there are M poor, migrant households living off their capital endowment and the flow of remittances, R, sent by the household head from abroad.[2] With the expenditure of each of these M households denoted by $E^M(P,U^M)$, the budget constraint, setting this group's

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[2]In relation to the works of Johnson (1967), Berry and Soligo (1969), and Bhagwati and Rodriguez (1975), Wong (1986) discusses the impact of emigration on welfare of the remaining residents in a one-good economy where emigrants leave behind some of their capital in the source country. While in the present model emigrants also leave their capital behind, there are two important distinctions with respect to the analytic framework: (i) in the present context (where the economy produces traded and non-traded goods rather than just one good) it matters whether the income from the capital owned by emigrants is consumed within the economy or abroad, and (ii) there are three rather than just two types of households in the present setting.

total expenditure equal to its income, may be written as

$$(1) \qquad ME^M(P,U^M) = M(R + rk^X),$$

where U^M is the level of welfare enjoyed by each migrant-dependent household and r is the rental rate on capital in the recipient country.

There are also X-M poor families, whose household heads do not migrate, but supply their unit-labor endowment to the local market. These X-M households thus enjoy a flow of income consisting of the recipient country's wage, w, the rental on their k^x units of capital, plus the flow of foreign aid, A, provided by the donor country to household heads who choose not to migrate. The budget constraint for this group of households is given by

$$(2) \qquad (X-M)E^X(P,U^X) = (X-M)(w + rk^X + A),$$

where U^X is the level of welfare of each poor household whose head does not migrate. Similarly, for the Y rich households, whose welfare is measured by U^Y, labor plus capital income must be equal to expenditure.

$$(3) \qquad YE^Y(P,U^Y) = Y(w + rk^Y).$$

With the assumptions on the production side of the model outlined above, the maximized value of the economy's product can be simply represented by a standard revenue function Q(P,K,L), where $K = Xk^X + Yk^Y$ and $L = X-M+Y$. The partial derivative of Q(.) with respect to P, $Q_P(P, Xk^X+Yk^Y, X-M+Y)$, represents the economy's supply of good N.

The market for non-traded goods is in equilibrium when total household demand

for N is equal to the supply:

(4) $ME_P^M(P,U^M) + (X-M)E_P^X(P,U^X) + YE_P^Y(P,U^Y) = Q_P(P,Xk^X+Yk^Y,X-M+Y)$,

where $E_P^i(P,U^i)$ is the compensated household demand function for good N of members of group i (i=M,X,Y). By Walras' Law, when the market for N clears, so does that for T.

By differentiating eqs. (1) - (3), and noting that the reciprocity relationship implies

(5) $\partial w/\partial P = Q_{PL}$ and $\partial r/\partial P = Q_{PK}$,

we obtain

(6) $(E_P^M - Q_{PK}k^X)dP = dR - E_U^M dU^M$,

(7) $(E_P^X - Q_{PK}k^X - Q_{PL})dP = dA - E_U^X dU^X$,

(8) $(E_P^Y - Q_{PK}k^Y - Q_{PL})dP = - E_U^Y dU^Y$,

where Q_{PK} and Q_{PL} represent the Rybczynski effects of a unit increase in capital and labor, respectively, on the economy's output of N. As good N is assumed to be labor intensive, $Q_{PK}<0$ and $Q_{PL}>0$. In eqs. (6)-(8), E_P^i is what each household of type i contributes to the demand for good N and $Q_{PK}k^i + Q_{PL}$ is what it contributes to the supply (except for M households which do not have any labor in the local economy). We can then express the net purchases (or implicit trade) of each household in the market for good N by μ_i,(i=M,X,Y).

(9) $\mu_M \equiv E_P^M - Q_{PK}k^X > 0$,

(10) $\mu_X \equiv E_P{}^X - Q_{PK}k^X - Q_{PL} < 0,$

(11) $\mu_Y \equiv E_P{}^Y - Q_{PK}k^Y - Q_{PL} \gtrless 0.$

That $\mu_M > 0$ is obvious, because for migrant households consumption of N is positive while the contribution of their capital to the supply of N is negative (by the Rybczynki effect and the assumption that N is labor intensive). Of the remaining two groups, X and Y, it follows that at least one must be a net seller of N. If it is only one, it has to be X, because X has the same amount of labor as Y, but less capital. This implies that, in comparison with a Y household, each X household contributes more to the supply and less to the demand for N [due to lower income, assuming that $A < r(k^Y - k^X)$]. Thus, we can be sure that $\mu_X < 0$, while μ_Y may be either positive or negative, depending on the parameters of the model and the magnitude of spending of emigrant-dependent households residing in the economy. The larger the total income and expenditure of M households relative to the total expenditure of the non-emigrant, rich and poor households, and the smaller the difference between k^Y and k^X, the more likely it is that the rich are also net sellers of N. In the discussion below, we shall refer to that case (i.e., $\mu_Y < 0$) as the one in which the rich and poor non-emigrants are "similar".

Using (9)-(11), eqs. (6)-(8) can be written in a more compact form as

(12) $E_U{}^M dU^M = dR - \mu_M dP,$

(13) $E_U{}^X dU^X = dA - \mu_X dP,$

(14) $E_U{}^Y dU^Y = - \mu_Y dP,$

showing that utility of each household depends on its terms of trade, while that of the M and X households also depends on remittances and aid, respectively.

We differentiate next eq. (4), the market-clearing condition for the non-traded good, to obtain $ME_{PP}{}^M dP + ME_{PU}{}^M dU^M + E_P{}^M dM + (X-M)E_{PP}{}^X dP + (X-M)E_{PU}{}^X dU^X -$

$E_P{}^X dM + YE_{PP}{}^Y dP + YE_{PU}{}^Y dU^Y - Q_{PP} dP + Q_{PL} dM = 0.$ This can simply be written as

(15) $\Sigma dP + ME_{PU}{}^M dU^M + (X-M)E_{PU}{}^X dU^X + YE_{PU}{}^Y dU^Y = (E_P{}^X - E_P{}^M)dM - Q_{PL} dM$

where $\Sigma \equiv ME_{PP}{}^M + (X-M)E_{PP}{}^X + YE_{PP}{}^Y - Q_{PP} < 0$ measures the responsiveness of the compensated excess demand for N to an increase in P. For the moment, let us assume that migration and remittances are not affected by the transfer of aid [i.e., we set $dR=dM=0$ in eqs. (12) and (15)]. The assumption that M is constant will be subsequently relaxed in Section 3. The system of eqs. (12) - (15) can now be solved for the effects of foreign aid to the non-migrating poor on the relative price of non-traded goods and the level of welfare of the three different types of households. We have

(16) $dP/dA = -(X-M)c^X/S > 0,$

(17) $E_U{}^M dU^M/dA = \mu_M(X-M)c^X/S < 0,$

(18) $E_U{}^X dU^X/dA = 1 + \mu_X(X-M)c^X/S > 0,$

(19) $E_U{}^Y dU^Y/dA = \mu_Y(X-M)c^X/S \gtrless 0,$

where $c^i = E_{PU}{}^i/E_U{}^i > 0$ is the marginal propensity of type i households (i=M,X,Y) to spend income on non-traded goods and $S = \Sigma - \mu_M Mc^M - \mu_X(X-M)c^X - \mu_Y Yc^Y$ is the slope of the uncompensated excess demand schedule for good N. Assuming Walrasian stability, $S < 0$. Thus a transfer of foreign aid to the non-migrating poor raises their expenditure and pushes up the price of non-traded goods in the recipient country. As stated in (16) this increase in price is positively related to the number of households benefiting from the transfer, (X-M), and their marginal propensity to consume non-traded goods. It is inversely related to S, which measures the responsiveness of excess demand for N to a change in P.

   In eq. (17), we see that this increase in P has a negative impact on the welfare of

M households. They are net buyers of N, hence they suffer a welfare loss associated with a deterioration in their terms of trade. On the other hand, eq. (18) shows that aid benefits the non-migrating poor both directly, by the amount of the transfer, and indirectly through a terms of trade improvement. Unlike M households, the non-migrating poor are net sellers of N. The welfare of the rich, shown in (19), may either rise or fall, depending on whether they are net sellers or net buyers of N. As noted above μ_Y can be either positive or negative. If the rich are "similar" to the poor, $\mu_Y < 0$, hence the increase in P provides them with an improvement in the terms of trade. Alternatively, if $\mu_Y > 0$, the rich are made worse off, leaving only the aid-receiving poor with an improvement in welfare.

3. **Aid and Welfare with Endogenous Emigration**

We consider next the more general case where the stock of migrants is affected by the flow of aid targeted at non-emigrants. It is natural to assume in the present context that the stock of migrants is directly related to the gap between what a poor, recipient-country worker can receive in the donor country, w*, and what he receives at home, inclusive of the aid transfer. We may thus write

(20) $M = F(w^* - w - A)$.

In Section 2 above, M was exogenously given. In terms of eq. (20), the elasticity of M with respect to the income gap was assumed to be zero. In that case, an increase in aid raises w by causing expenditure on N and the price of N to increase. From eq. (16) and the reciprocity relationship, $\partial w / \partial P = Q_{PL}$, we can solve for the implied increase in w. That is,

(21) $dw/dA = -Q_{PL}(X-M)c^X/S > 0$,

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when the stock of migrants is exogenously given.

Should any migrants return (or potential migrants be discouraged from emigrating) due to an increase in aid to the non-migrating poor, they would contribute to an increase in the supply of labor in the recipient country and an increase in the supply of N, relative to the demand, at any given P. This would at least dampen the expenditure-driven increase in P or, if the supply of labor in the local market increases sufficiently in response to the aid transfer, even cause P and w to decline. In equilibrium, the magnitude of the decline in w will depend on, among other parameters, the elasticity of M with respect to the income gap in eq. (20).

If we consider the case opposite to that examined in Section 2, (i.e., the case of infinite elasticity, which we can think of as being one of "perfect" international labor mobility, where the cost of migration and family separation is zero), any increase in A would be accompanied by a return flow of emigrants to the point where w is reduced by as much as the increase in A. We then have dw = -dA, with M endogenously determined to clear the labor market at the new, lower w. In general, we would expect the elasticity of M with respect to the income differential to be less than infinite, but greater than zero. As a result of an endogenous response of M to an increase in aid to the non-migrating poor, we then have

(22) $dw = -\phi dA$, where $Q_{PL}(X-M)c^X/S \le \phi \le 1$.

We shall now examine, in this general case, the effects of an increase in aid to non-migrating poor on the welfare of the different households in the recipient country. In comparison with the case of an exogenously given M, we expect the welfare implications to be quite different. Instead of aid simply driving up the price of non-traded goods by causing an increase in expenditure of aid recipients, as in Section 2, it will have the opposite effect of reducing P if $\phi > 0$. With the terms of trade possibly

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moving in the opposite direction, so may the level of welfare of any given household. Let us consider now the welfare consequences more explicitly.

Use of eqs. (6)-(8) along with the reciprocity relationship and eq. (22) (which makes $dP=-\phi dA/Q_{PL}$) yields,

(23) $-(E_P{}^M - Q_{PK}k^X)\phi dA/Q_{PL} = dR - E_U{}^M dU^M,$

(24) $-(E_P{}^X - Q_{PK}k^X - Q_{PL})\phi dA/Q_{PL} = dA - E_U{}^X dU^X,$

(25) $-(E_P{}^Y - Q_{PK}k^Y - Q_{PL})\phi dA/Q_{PL} = - E_U{}^Y dU^Y.$

If the remittance flow to each M household is constant (i.e., dR=0), the effect of targeted aid on welfare of the three types of households can be written as

(26) $E_U{}^M dU^M = (\mu_M\phi/Q_{PL})dA \gtrless 0,$

(27) $E_U{}^X dU^X = (1+\mu_X\phi/Q_{PL})dA > 0,$

(28) $E_U{}^Y dU^Y = (\mu_Y\phi/Q_{PL})dA \gtrless 0.$

Aid targeted at the non-migrating poor now benefits all poor households, regardless of whether they are of type X or M, provided that the stock of migrants is sufficiently responsive to a change in the international income differential to make $\phi > 0$. For the M households, eq. (26) shows that in that case they benefit from an improvement in their terms of trade. This arises as aid brings about a reduction in migration and an increase in the supply of labor in the recipient country to generate a sufficient increase in the supply of non-traded goods so as to generate a decline in P. However, if the response of migration to targeted aid is weak (i.e., $\phi < 0$), M households experience a deterioration of their terms of trade and a decline in welfare, which is qualitatively similar to what we have seen in Section 2.

The fate of the rich, shown in eq. (28) also hinges on their terms of trade. If $\phi >$

0, the rich enjoy an improvement in their terms of trade and welfare when they are net buyers of N. Alternatively, if they are "similar" to the poor (i.e., net sellers of N), their welfare declines. Note that this result is precisely the opposite of that we obtained in Section 2 under the assumption that M is exogenously given or, more generally, whenever $\phi < 0$. Responsiveness of migration flows to foreign aid is therefore of key interest not only to donor countries that host the immigrants or the poor who migrate, but it is also important to the rich of the recipient country who are indirectly affected by migration through a change in their terms of trade.

Turning to the effect of aid on the welfare of the direct beneficiaries, the poor who do not migrate, we note that the total effect in eq. (27) consists of the direct effect dA, plus the indirect (terms-of-trade) effect $(\mu_X \phi / Q_{PL}) dA$. Since $\mu_X < 0$, the indirect effect is negative when $\phi > 0$, but positive, as in Section 2, when $\phi < 0$. It can be easily shown, however, that targeted aid does in fact benefit the non-migrating poor for the entire range of ϕ. In the event that $\phi < 0$, (27) is necessarily positive as $\mu_X < 0$. To see that (27) is also positive when $0 \leq \phi \leq 1$, we can write $E_U^X dU^X = (E_P^X - Q_{PK} k^X)(\phi / Q_{PL}) dA + (1-\phi) dA$. This expression is unambiguously positive as $(E_P^X - Q_{PK} k^X) > 0$. Thus the targeted non-emigrant poor always gain from foreign aid, although the magnitude of their welfare gain is inversely related to ϕ, as can be seen in (27). The reason is that the greater the value of ϕ, the lower the value of P and the lower the welfare of net sellers of N.

An interesting question is whether M or X households benefit more from this aid program. We have already seen that the M households experience a decline in welfare when $\phi < 0$, but gain if $\phi > 0$. Moreover, in (26), the magnitude of the welfare gain can be seen to increase in ϕ. Thus, if it is possible for the M households to gain more from aid than the direct beneficiaries, it would clearly be the case when $\phi=1$. By comparing (26) and (27) for $\phi=1$, we find that M households benefit more than the X households if $\mu_M > Q_{PL} + \mu_X$, which is simply $E_P^M > E_P^X$. In other words, if income and expenditure of a

typical M household exceeds that of an X household. Anecdotal evidence on the expenditure pattern of M households in countries of emigration would suggest that this is in fact the case. We cannot therefore rule out the possibility that the M households may benefit more from aid than the aid recipients themselves.

The intuition behind this result is simple to grasp in the case of $\phi = 1$. The wage earnings of X households decline in that case by as much as the increase in aid, so the only sources of potential welfare gain for them is from an increase in rental on capital and a decline in the cost of purchasing N. The income gain from an increase in rental on capital is identical to that enjoyed by the M households, as both X and M families own exactly k^X units of capital. What is left to compare is the benefit of being able to purchase good N at a lower price. Thus, in the extreme case of $\phi = 1$, if the M households have higher income and expenditure on good N, they benefit more from the aid program than the X households that receive the aid.

4.   **Aid, Emigration, and Foreign Exchange Earnings**

To determine the endogenous response of the stock of migrants to an increase in targeted aid, we start with eq. (15) and use $dP=-(\phi/Q_{PL})dA$ along with eqs. (26)-(28) to obtain

(27) $-(\Sigma\phi/Q_{PL})dA + Mc^M(\mu_M\phi/Q_{PL})dA + (X-M)c^X(1+\mu_X\phi/Q_{PL})dA + Yc^Y(\mu_Y\phi/Q_{PL})dA$

$$= (E_P^X - E_P^M)dM - Q_{PL}dM.$$

The left-hand side of this expression is simply the excess demand for N caused (directly and indirectly through a change in P) by the transfer of aid, while the right hand-side shows the excess supply of N generated by the change in the stock of migrants. This expression can be simplified to yield the change in M in response to an increase in targeted aid as

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(27') $dM/dA = [(S\phi/Q_{PL}) - (X-M)c^X]/[(E_P^M - E_P^X)+ Q_{PL}] < 0$

So the stock of migrants diminishes in response to an increase in aid, except for the extreme case, treated in Section 2, where M is constant and $\phi = Q_{PL}(X-M)c^X/S$. The decrease in M is larger, the greater the sensitivity (ϕ) of migration to the international income differential, the greater the sensitivity (S) of excess demand for N to a change in P, the greater the number of households (X-M) receiving aid, the greater their propensity (c^X) to consume good N, the smaller the difference between the M and X households in terms of income and hence expenditure on N, and the smaller the Rybczynski effect of a change in the economy's supply of labor on the output of N.

Let us now denote by E the economy's total foreign exchange inflow that can be attributed to aid and remittances.

(28) $E = (X-M)A + RM.$

Assuming that R is constant[3], the change in this inflow in response to an increase in aid is given by

(29) $dE/dA = (X-M) + (R-A)dM/dA.$

With the aid of (27'), we can write (29) as

(30) $dE/dA = (X-M)+(R-A)[(S\phi/Q_{PL})-(X-M)c^X]/[(E_P^M- E_P^X)+Q_{PL}].$

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[3]In the context of a different model, Gaytan-Fergoso and Lahiri (2000) go a step further to endogenize the flow of remittances enjoyed by each emigrant household.

In general, this expression may be either positive or negative, depending on the values of the model's parameters. What we can show, however, is that for a relatively weak response of migration to the aid program, $dE/dA > 0$. Let us consider the case in which M declines in response to aid just sufficiently to prevent w and P from rising (i.e., $\phi=0$). An increase in E occurs in that case provided that

(31) $(X-M)[(E_P^M - E_P^X)+Q_{PL}] + (R - A)(X-M)c^X] > 0.$

It can be shown that this inequality is indeed satisfied. With all types of households sharing identical, homothetic preferences, $(E_P^M - E_P^X) = (R - w - A)c^X$, so that (31) can be written as $(X-M)(Q_{PL} - wc^X) > 0$. Let $\eta = Q_{PL}(P/w)$ be the Stolper-Samuelson elasticity of w with respect to P. Since $\eta>1$ (the magnification effect) and $Pc^X<1$ (assuming that both goods are normal), it follows that dE/dA is necessarily positive for $\phi=0$.

The value of E may, however, decline in response to an increase in A for a sufficiently large value of ϕ. We can solve (30) for the critical value of ϕ, call it ϕ^*, such that E remains unchanged following an increase in A.

(32) $\phi^* = -(X-M)(w/PS)(\eta - Pc^X)Q_{PL}/(R-A) > 0.$

For any $\phi > \phi^*$, an increase in targeted aid will reduce the combined flow of aid and remittances to the recipient country. The impact of reduced migration on the flow of remittances is then larger than the increase in the flow of aid. Alternatively, if $\phi < \phi^*$, the total inflow of foreign exchange is boosted by the increase in aid.

This critical value is obviously an increasing function of the number (X-M) of direct beneficiaries of aid, but a decreasing function of the gap between R and A. Also note that it is a decreasing function of S, and of any other parameter we have seen in (27'), except for ϕ, which contributes to a larger decline in M for any given increase in aid. The important point is that foreign aid targeted at reducing migration will not

necessarily reduce the flow of foreign exchange into the recipient country. It will bring about a reduction in E only if migration is sufficiently responsive to the aid program so that $\phi > \phi^* > 0$. As we have already seen in Section 3, however, in that case the aid program is unambiguously beneficial to the poor of the recipient country, regardless of whether they are migrant or non-migrant households. Perhaps that should be the overriding criterion in the evaluation of any aid program.

5.   **Concluding Remarks**

The present study examines the implications of providing foreign aid to the poor household heads of a developing country who do not migrate to the donor country. Such an aid program can be seen as being designed to encourage potential migrants to remain at home. In a setting of this type, a number of interesting questions emerge. First, how do such targeted aid transfers affect the welfare of the poor, both the families that stay at home and those whose household head works abroad, making the family ineligible for the transfer? What is the effect on the welfare of the rich? How does aid affect international migration, remittance flows and the economy's overall foreign-exchange inflows?

The analysis of these issues is conducted within a general-equilibrium framework under alternative assumptions with respect to the sensitivity of migration flows to the targeted aid program. When this sensitivity is low, the aid transfer to the non-migrating poor households is found to have a positive effect on their welfare, while lowering the welfare of the emigrant-dependent households. Welfare of the rich can move in either direction, depending on how much capital they own relative to the poor and on other parameters of the model.

Alternatively, if the sensitivity of migration to targeted aid is high, all poor households are found to benefit from the aid transfers. The welfare of the rich can move, once again, in either direction, although the criteria for welfare improvement is now the reverse of what it was in the case of low sensitivity of migration to the aid

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program. The paper ends with the analysis of the impact of aid on the stock of migrants and remittance flows. While targeted aid is found to have a negative impact on the stock of migrants and remittances, the effect on the overall inflow of foreign exchange, including aid and remittances can be positive, even if migration drops sufficiently to lower the wages of the recipient country.

References

Berry, R.A. and Soligo, R. (1969). Some welfare aspects of international migration. *Journal of Political Economy* 77, 778-794.

Bhagwati, J.N. and Rodriguez, C.A. (1975). Welfare-theoretical analysis of the brain drain. *Journal of Development Economics* 2, 195-221.

Djajić, S. (1986). International migration, remittances and welfare in a dependent economy. *Journal of Development Economics* 21, 229-234.

Djajić, S. (1998). Emigration and welfare in an economy with foreign capital. *Journal of Development Economics* 56,433-445.

Johnson, H.G. (1967). Some economic aspects of the brain drain. *The Pakistan Development Review* 7, 379-411.

Kirwan, F. and Holden, D. (1986). Emigrants' remittances, non-traded goods and economic welfare. *Journal of Economic Studies* 13, 52-58.

Gaytan-Fregoso, H. and Lahiri, S. (2000). Foreign aid and illegal immigration. *Journal of Development Economics* 63, 515-527.

Hatzipanayoutou, P. and Michael M.S. (2006), Migration, tied foreign aid and the welfare state. Paper presented at the WIDER conference on Aid: Principles, Policies and Performance, June 16-17, 2006.

Quibria, M.G. (1996). International migration, remittances and income distribution in the source country. *Bulletin of Economic Research* 48, 29-46.

Rivera-Batiz, F. (1982). International migration, non-traded goods and economic welfare in the source country. *Journal of Development Economics* 11, 81-90.

Rivera-Batiz, F. (1986). International migration, remittances and economic welfare in the source country. *Journal of Economic Studies* 13, 3-19.

Tompson, H. (1984). International migration, non-traded goods and economic welfare in the source country: A comment. *Journal of Development Economics* 16, 321-324.

Wong, K.-y. (1986). The economic analysis of international migration: A generalization. *Canadian Journal of Economics* 19, 357-362.