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INTERNATIONAL MIGRATION, NON-TRADED GOODS AND ECONOMIC WELFARE IN THE SOURCE COUNTRY

A Comment

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Labor emigration redistributes income in a two factor, two good economy where one good is internationally non-traded. Labor's nominal wage rises as nominal capital payments fall. Recent research has shown that the prices of non-traded goods rise, causing society's welfare to decline. Here the induced change in the real income of each factor is considered separately. There is an ambiguity with regard to the real income of non-emigrating labor. If labor spends a relatively small fraction of income on the non-traded good, its real income may rise, even though society suffers the loss of welfare.

1. Introduction

Recent research by Rivera-Batiz (1982a) examines the welfare effects of emigrating labor in a two factor, two good trade model, where one of the goods is non-traded. Labor emigration leads to a rise in the price of the non-traded good, due in part to a rising labor wage, when the non-traded sector is labor intensive. It is shown that the emigration causes the economy as a whole to suffer a welfare loss.

Labor, considered separately, however, faces higher prices with a higher nominal wage. This creates what has been called the neoclassical ambiguity, uncertainty regarding the net effect upon labor's real income. There is no such uncertainty for the owners of capital, whose payment falls. We examine here the conditions which determine the fate of labor's real income.

2. The model

The solution of this general equilibrium model is well-known and sketched in the appendix of Rivera-Batiz (1982a). Two resources, labor (L) and capital (K), produce two types of goods, non-traded (N) and traded (T), in constant returns to scale production. The amount of a factor used to produce one unit of a good depends upon the ratio of wages (w) to rental rates (r), i.e., $C_{ij}=C_{ij}(w/r)$, where $i=L$, K, and $j=N,T$. The economy is small in that it

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has no effect upon the world market for tradeables. We also assume full employment and competitive pricing:

$$C_{iN}X_N + C_{iT}X_T = V_i, \quad \text{and} \tag{1}$$

$$wC_{Lj} + rC_{Kj} = P_j. \tag{2}$$

The term X_j represents the output, and P_j the price, of the jth good, while the endowment of the ith factor is represented by V_i.

The price of non-tradeables is determined endogenously in the markets for the two goods. Supply must equal demand in each market. Where $P \equiv P_N/P_T$ and $Y \equiv X_T + PX_N$,

$$X_j = D_j(P, Y). \tag{3}$$

The non-traded sector is assumed to use labor intensively, i.e., $C_{LN}/C_{LT} > C_{KN}/C_{KT}$. Let λ_{ij} represent the percentage of factor i used in industry j $(\lambda_{ij} \equiv C_{ij}X_j/V_i)$, and θ_{ij} the share of factor i from industry j $(\theta_{ij} \equiv w_i C_{ij}/P_j)$. For notational convenience, $\lambda \equiv \lambda_{LN}\lambda_{KT} - \lambda_{LT}\lambda_{KN}$, and $\theta \equiv \theta_{LN}\theta_{KT} - \theta_{LT}\theta_{KN}$. It follows from the factor intensity condition that $\lambda > 0$ and $\theta > 0$.

Cost minimizing behavior of firms insures that $\theta_{Lj}C^*_{Lj} + \theta_{Kj}C^*_{Kj} = 0$. (For any variable x, $x^* \equiv \mathrm{d}x/x$.) The substitution term σ_j, defined as $(C^*_{Kj} - C^*_{Lj})/(w^* - r^*)$, is positive. We see that

$$C^*_{Lj} = -\theta_{Kj}\sigma_j(w^* - r^*) \quad \text{and} \quad C^*_{Kj} = \theta_{Lj}\sigma_j(w^* - r^*). \tag{4}$$

It follows from (1) and (4) that

$$\begin{aligned} &-\beta_L w^* + \beta_L r^* + \lambda_{LN}X^*_N + \lambda_{LT}X^*_T = V^*_L, \quad \text{and} \\ &\beta_K w^* - \beta_K r^* + \lambda_{KN}X^*_N + \lambda_{KT}X^*_T = V^*_K, \end{aligned} \tag{5}$$

where $\beta_L \equiv \lambda_{LN}\theta_{KN}\sigma_N + \lambda_{LT}\theta_{KT}\sigma_T$, and $\beta_K \equiv \lambda_{KN}\theta_{LN}\sigma_N + \lambda_{KT}\theta_{LT}\sigma_T$. Given cost minimization, from (2), one can show that

$$\theta_{Lj}w^* + \theta_{Kj}r^* = P^*_j. \tag{6}$$

Positive demand elasticities in the economy are $\eta_{PN} = -(\partial D_N/\partial P)(P/D_N)$, $\eta_{PT} = (\partial D_T/\partial P)(P/D_T)$, and $\eta_{Yj} = (\partial D_j/\partial Y)(Y/D_j)$. We find from differentiating (3), that

$$X^*_N + \eta_{PN}P^*_N - \eta_{YN}Y^* = \eta_{PN}P^*_T \quad \text{and} \quad X^*_T - \eta_{PT}P^*_N - \eta_{YT}Y^* = \eta_{PT}P^*_T. \tag{7}$$

The complete model is given by eqs. (5), (6), and (7). The comparative statics

Table 1

V_L^*	
w^*	$\theta_{KT}\eta_{KY}$
r^*	$-\theta_{LT}\eta_{KY}$
X_N^*	$-\theta\lambda_{KT}\eta-\beta_K\eta_{YN}$
X_T^*	$\theta\lambda_{KN}\eta-\beta_K\eta_{YT}$
P_N^*	$\theta\eta_{KY}$
Y^*	$\theta\eta_{KP}-\beta_K$

effects on each endogenous variable with regard to a change in the economy's labor force are presented in table 1. The negative determinant D of the system equals $-\eta_{YN}\beta_N-\eta_{YT}-\beta_T-\theta\lambda\eta$, where $\eta\equiv\eta_{YN}\eta_{PT}+\eta_{YT}\eta_{PN}$, $\beta_N\equiv\beta_L\lambda_{KT}+\beta_K\lambda_{LN}$, and $\beta_T\equiv\beta_L\lambda_{KT}+\beta_K\lambda_{LT}$. The expressions in the table would be divided by D to obtain the actual elasticities. Other notations used in the table are: $\eta_{KY}\equiv\lambda_{KN}\eta_{YN}+\lambda_{KT}\eta_{YT}$, and $\eta_{KP}\equiv\lambda_{KN}\eta_{PN}-\lambda_{KT}\eta_{PT}$.

3. Results

The production of non-traded goods falls as non-traded prices rise with labor emigration. The fall in supply must outweigh the fall in demand. The economy as a whole suffers, as Rivera-Batiz (1982a) points out. Owners of capital see their payment falling, suffering a real income loss.

The direction of change in labor's real income depends upon its consumption share of non-tradeables, as shown by Ruffin and Jones (1977). The elasticity of labor's wage with respect to changes in P_N is denoted by β_{LN}, i.e., $\beta_{LN}\equiv w^*/P_N^*$. We see that with changing endowments, $\beta_{LN}=\theta_{KT}/\theta$, which is positive; for capitalists, $\beta_{KN}\equiv r^*/P_N^*$, and equals $-\theta_{LT}/\theta$, which is negative. Let θ_N^i represent the percentage of the income of factor i which is spent on the non-traded good. The real income of a factor is altered by $-\theta_N^i P_N^*$ as P_N changes. The net effect on that factor's real income can then be stated

$$y_i^*=(\beta_{iN}-\theta_N^i)P_N^*. \tag{8}$$

The real income of capitalists always moves in the opposite direction to the induced change in P_N, falling with labor emigration. When $\theta_N^L>\beta_{LN}$, we see that $y_L^*<0$, i.e., labor's real income falls. But labor's real income would rise in case $\theta_N^L<\beta_{LN}$, with labor spending a relatively small fraction of its income on the non-traded good. These results depend directly upon the factor intensity condition, as stressed by Rivera-Batiz (1982b).

There are also circumstances where capital owners could benefit from the emigrating labor. If the model were expanded to include both skilled and unskilled labor, complementarity in production becomes possible. Capital could then be an enemy with unskilled labor, with nominal capital payments rising as the endowment of unskilled labor fell.

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