

Illegal Migrants, Tourism and Welfare: A Trade Theoretic Approach*

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1. Introduction

Many countries receive illegal migrants and most of these work in the services sector. India, France, Italy and other European countries are recipients of illegal workers. In India these illegal workers come mainly from Bangladesh while in European countries from Africa, India, Bangladesh, Sri Lanka and so on. Illegal migration is not rigorously policed in many countries and in others, although there is a threat of being deported, such threats are extraordinarily difficult to administer. For example, in India it is difficult to distinguish between a Bangladeshi and a local Indian resident. This may not be a problem in the case of, for example, France where the colour of the skin may reveal whether a person is a migrant or not. Further investigation may then show whether such a person is a legal or illegal migrant. Throughout this paper we shall assume that, although the threat of punishment exists, policing of illegal migrants is not rigorously imposed and the police sector is dropped in our analysis. This paper attempts to link tourism and illegal migration.

Tourism is a growing industry in many countries. Tourists are mainly a consumer of non-traded goods and services. Such services consist of hotel accommodation, food and visiting tourists spots such as museums, art galleries, beaches and so on. All these goods and services require up keep and maintenance. In France it is reported that 70% of the unskilled labour force used in smaller hotel establishments are illegal workers who are willing to work for a wage less than that of the local workers. These unskilled illegal migrants help in maintaining and/or lowering the relative price of non-traded goods which the tourists consume thereby helping tourism by being competitive in the world market.

We employ a three goods model where two traded and one non-traded good are produced in the economy. The illegal migrants are sector specific and only work in the non-traded goods sector along with local workers. The inflow and the wage rate of illegal workers is determined endogenously. We also introduce an exogenously given minimum wage in the model which generates unemployment for the unskilled native workers. As the wages of illegal workers are totally flexible and lower than those of native workers they are fully employed. Tourism is incorporated in the model by introducing demand by tourists for the non-traded good¹. Our main interest will be in the analysis of the impact of an increase in tourism on the inflow of illegal migrants and their wages, resident welfare and employment, relative price of non-traded good and the degree of exploitation, if any, of the illegal workers.

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Our results establish the following interesting features regarding the interrelationship between tourism and illegal migrants. First, by paying less to illegal migrants than local workers the relative price of the non-traded goods is shown to be lower than in the absence of such workers. This helps the tourist trade in countries where the wage for the local workers is much higher than other competing countries. Second, it is shown that an expansion in tourist trade, under certain intensity conditions, necessarily raises resident welfare and employment and lowers the welfare of the illegal migrants. Third, it is established that an increase in tourism increases the supply of illegal migrants and lowers the relative price of non-traded goods. This paper clearly shows the links between tourism and illegal workers and also provides a rationale for not policing the flow of illegal workers (under certain conditions).

II The Model

We assume that three goods; X, Y and N are produced in the economy. Commodities X and Y are the traded goods and N the non-traded good. The non-traded good is consumed both by domestic residents and tourists which makes it a traded good with the following important characteristics. First, the consumer moves to consume it rather than the commodity. Second, its price is endogenously determined by local, foreign demand and the domestic supply².

Commodities X and Y are produced with the help of capital, unskilled and skilled labour by neoclassical production functions:

$$X = F_X [K_X, L_X, L_{SX}] \quad (1)$$

$$Y = F_Y [K_Y, L_Y, L_{SY}] \quad (2)$$

where K_i , L_i and L_{Si} ($i = X, Y$) denote the allocation of capital, unskilled labour and skilled labour to these sectors respectively.

The non-traded good is produced with the help of capital, native unskilled labour and illegal migrants by the use of a neoclassical production function:

$$N = F_N [K_N, L_N + L_{NA}] = F_N [K_N, \tilde{L}] \quad (3)$$

where K_N and \tilde{L}_N denote the allocation of capital and domestic labour to the production of non-traded good, and L_{NA} the allocation of illegal migrants to the non-traded good. Illegal migrants are sector specific.

We now introduce a migration function for the illegal migrants:

$$L_{NA} = f \left[\frac{E}{\bar{E}} U(\alpha \bar{w}) - U(\bar{w}_A) \right] \quad (4)$$

where f is an increasing function of difference between the expected utility in the receiving country multiplied by the rate of employment and the utility in the source country ($\alpha \bar{w}$ is the wage received by illegal workers ($\alpha < 1$) and \bar{w}_A the wage in the source country)³. Note that this function has no element of policing. Also it is assumed that $U(0) = 0$. The aspect of illegality is captured by α which reflects the power of employers over illegal migrants (the threat that they may be reported to local authorities and deported). The term E represents the actual employment and \bar{E} the total local labour force. In the case of full employment $E/\bar{E} = 1$. Illegal migrants generally feel discouraged from migrating to a country which is characterised by high levels of unemployment. The determinants of L_{NA} and α are shown in Figure 1. The value of the marginal product curve, VMP_N , is drawn in Figure 1 as AA . Given the value of \bar{w} local employment is determined in this sector to be L_N^* . We know that \bar{w}_A is less than \bar{w} and it is shown in the graph as \bar{w}_A . From this point we draw the function L_{NA} as specified by equation (4). This is an increasing function and shown by the curve $\bar{w}_A B$. The intersection of this curve with AA at e provides us with the wages received by illegal migrants. This wage is shown by $\alpha \bar{w}$ and the number of illegal migrants by $L_N^* \tilde{L}_N$. Note that even without policing the number of illegal migrants is finite and that everybody will not migrate.

It is appropriate now to write the price equations of this model. These are given below:

$$a_{LX} \bar{w} + a_{LSX} w_S + a_{KX} r = P \quad (5)$$

$$a_{LY} \bar{w} + a_{LSY} w_S + a_{KY} r = 1 \quad (6)$$

$$a_{LN}\bar{w} + a_{LNA}\alpha\bar{w} + a_{KN}r = P_N \quad (7)$$

In Figure 2 the price determination procedure for this model is explained. In the top part of the diagram the unit cost functions for X and Y are drawn. The intersection of these functions at e provides us with equilibrium values for w_S and r as shown by w_S^* and r^* . In the lower part of the diagram several unit cost functions relating to different levels of the relative price of non-traded goods are drawn. It is interesting to note that the non-traded goods sector pays a wage rate which is the weighted average of the minimum wage paid to domestic workers and the wage received by illegal migrants. This is defined below:

Figure 1

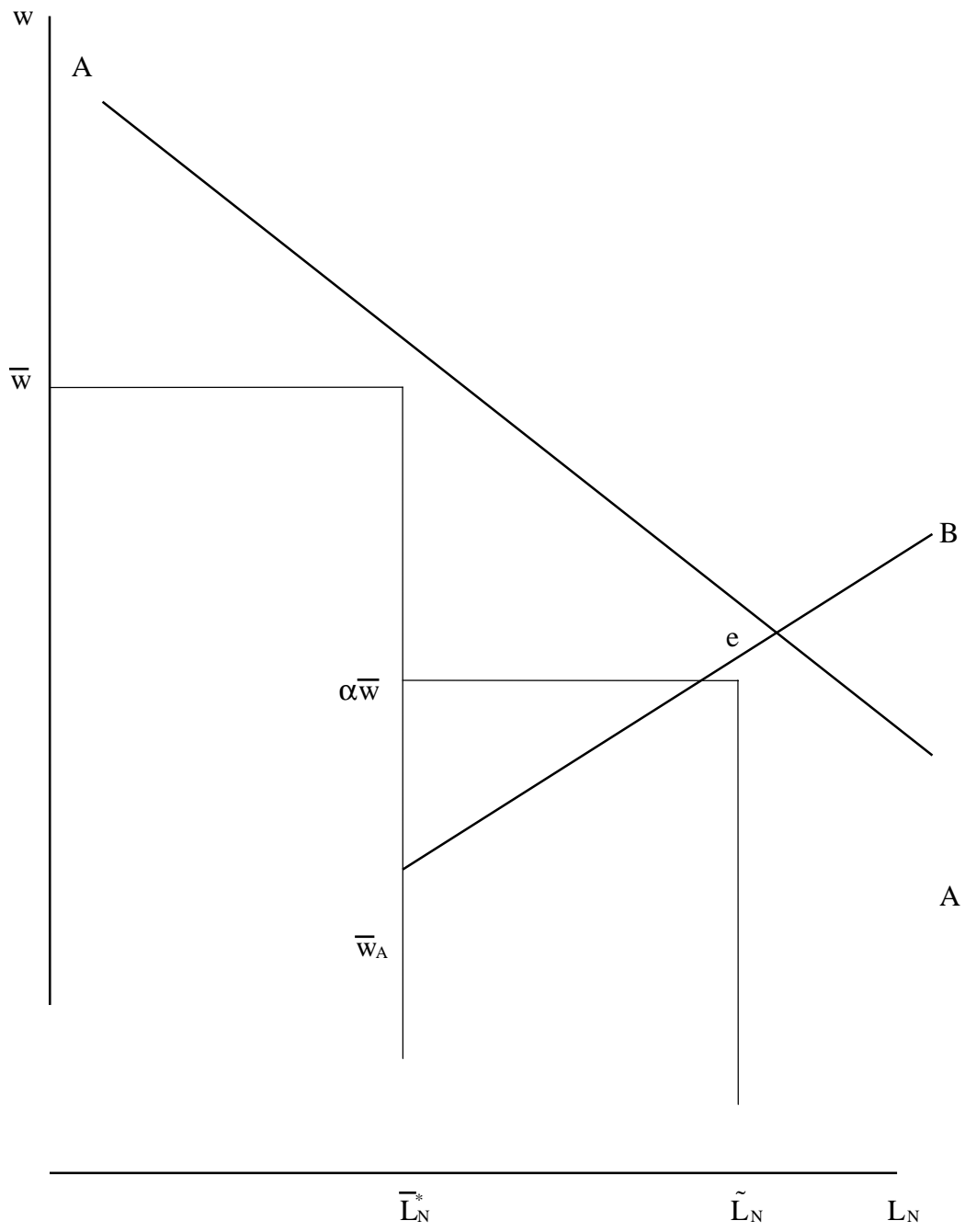
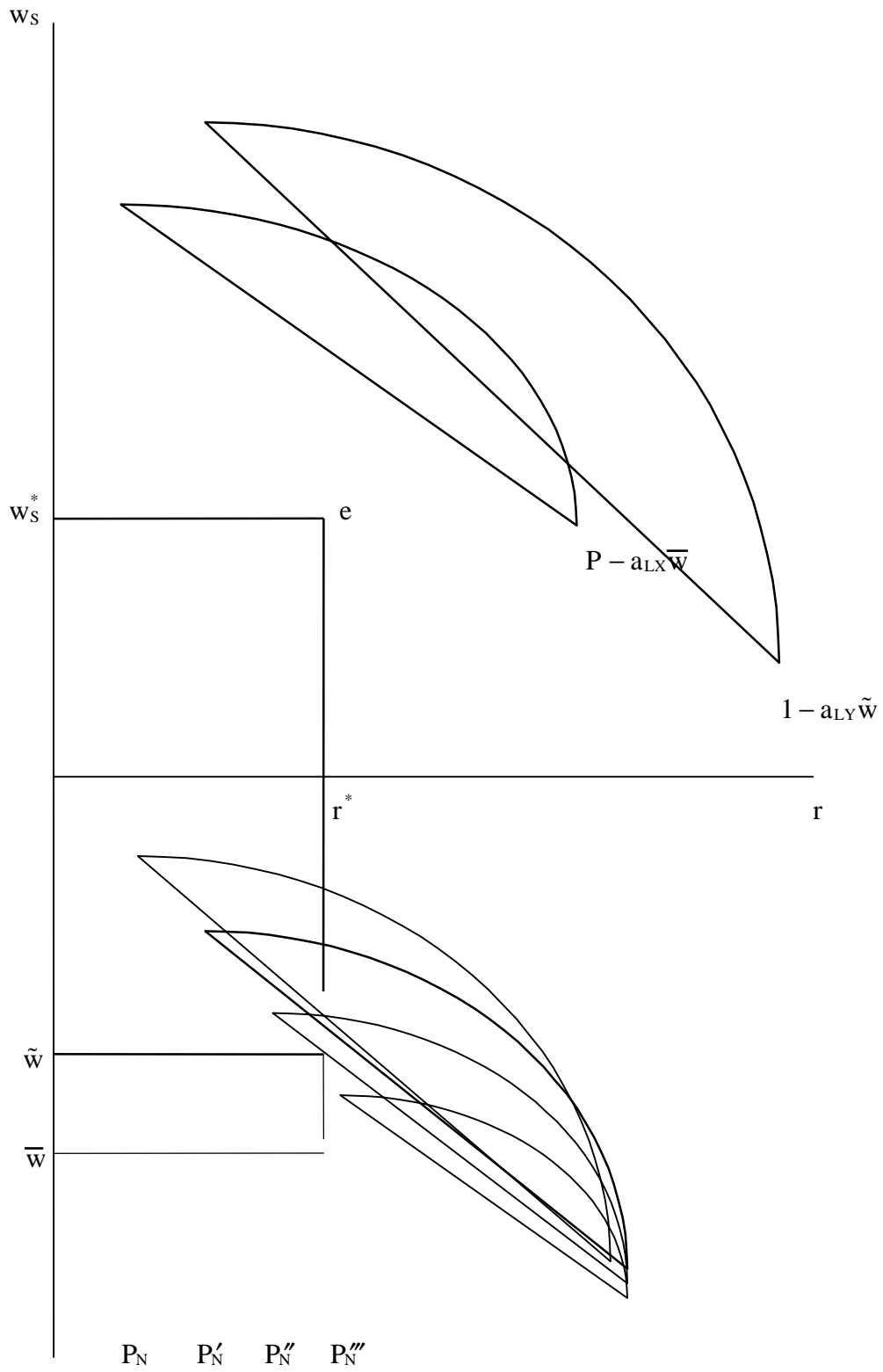


Figure 2



$$\tilde{w} = \left(\frac{L_N}{L_N + L_{NA}} \right) \bar{w} + \left(\frac{L_{NA}}{L_N + L_{NA}} \right) \alpha \bar{w} \quad (8)$$

It is assumed that $L_N > L_{NA}$. This average wage, \tilde{w} , is shown in the bottom quadrant of Figure 3 which provides a solution for P_N . It is important to note that illegal migrants lower the relative price of non-traded goods and services. The relative price of non-traded goods matters for tourists as it consists of a large part of tourist expenditure in the country they choose to visit. In the absence of illegal migrants the relative price of non-traded goods would have settled at P_N'' which is greater than P_N' .

Let D_T denote the demand for non-traded goods by tourists and D_R by domestic residents. Market clearing for non-traded goods requires that:

$$D_R[P, P_N, I] + D_T[P, P_N, \beta] = N \quad (9)$$

Note that tourist demand, D_T , does not depend on income. Ideally it should depend on foreign income. Also note that D_T has been made a function of β which is a shift parameter and we will be examining the impact of a shift in demand for tourism on endogenous variables.

The factor utilisation equations require that:

$$a_{KX}X + a_{KY}Y + a_{KN}N = \bar{K} \quad (10)$$

$$a_{LX}X + a_{LY}Y + a_{LN}N = E \leq \bar{E} \quad (11)$$

$$a_{LSX}X + a_{LSY}Y = \bar{L}_S \quad (12)$$

$$a_{LNA}N = L_{NA} \quad (13)$$

where a_{ij} 's represent variable input coefficients.

Finally, we define the national income equation from factor side:

$$\begin{aligned} PD_X + D_Y + P_N D_R + P_N D_T = I &= \bar{w}E + \alpha \bar{w}L_{NA} + r\bar{K} + w_S \bar{L}_S \\ &= PX + Y + P_N N \end{aligned} \tag{14}$$

and resident income from factor side as:

$$I^R = \bar{w}E + r\bar{K} + w_s\bar{L}_s \quad (15)$$

This completes the specification of the model.

III Results

(a) Impact of Shift in Tourist Demand on employment, Illegal Migration and Welfare

In this section of the paper, we examine the consequences of an increase in tourist demand for non-traded goods and services on several variables and in particular on domestic employment, illegal migration, resident and non-resident welfare and on the wages received by illegal migrants . By differentiating the equation system (4) to (14) and using properties of the L_{NA} function we obtain the following matrix. The first three rows come from equations (10) to (12). The following row from equation (7) and row five from equation (4). Row six is obtained by inverting equation (4). Row seven from equation (9) and the last row from national income identity equation (14).

$$\begin{array}{cccccccccc}
\lambda_{KX} & \lambda_{KY} & \lambda_{KN} & 0 & 0 & 0 & 0 & 0 & \hat{X} & 0 \\
\lambda_{LX} & \lambda_{LY} & \lambda_{LN} & -1 & 0 & 0 & 0 & 0 & \hat{Y} & 0 \\
\lambda_{LSX} & \lambda_{LSY} & 0 & 0 & 0 & 0 & 0 & 0 & \hat{N} & 0 \\
0 & 0 & 0 & 0 & \theta_{WLNA} & -1 & 0 & 0 & \hat{E} & = 0 \\
0 & 0 & 0 & -C & -C' & 0 & L_{NA} & 0 & \hat{\alpha} & 0 \\
0 & 0 & 0 & C'' & 1 & 0 & 0 & 0 & \hat{P}_N & 0 \\
0 & 0 & -1 & 0 & 0 & A & 0 & \varepsilon_I \frac{D_R}{N} & \hat{L}_{NA} & -\beta_T \hat{\beta} \\
0 & 0 & 0 & -\theta_E & 0 & -\theta_T & -\theta_{LNA} & 1 & \hat{I} & 0
\end{array} \quad (16)$$

where λ_{ij} 's = factor shares

$$\theta_{\text{WLNA}} = \frac{a_{\text{LNA}} \alpha \bar{w}}{P_N} = \text{relative share of illegal migrant wage in the relative price of non-traded goods}$$

$$C = f' \frac{E}{\bar{E}} U(\alpha \bar{w}) > 0$$

$$C' = \alpha f' \frac{E}{\bar{E}} (U^{-1})' \bar{w} > 0$$

$$C'' = (U^{-1})' \left[f^{-1} + U(\bar{w}_A) \right] \frac{\bar{E}}{E} \frac{1}{\alpha \bar{w}} \hat{E}$$

$$\varepsilon_I = \frac{I}{D_R} \frac{D_R}{\partial I} = \text{income elasticities of the demand for non-traded goods by residents}$$

$$A = \left[\frac{D_R}{N} \frac{P_N}{D_R} \frac{\partial D_R}{\partial P_N} + \frac{D_T}{N} \frac{P_N}{D_T} \frac{\partial D_T}{\partial P_N} \right] = \text{price elasticity of the demand for non-traded goods by residents and tourists}$$

$$\theta_E = \frac{\bar{w}E}{I} = \text{share of resident wages in total income}$$

$$\theta_T = \frac{P_N D_T}{I} = \text{share of tourist demand in total income}$$

$$\theta_{\text{LNA}} = \frac{\alpha \bar{w} L_{\text{NA}}}{I} = \text{share of illegal migrant income in total income}$$

$$\beta_T = \frac{D_T}{N} \frac{\beta}{D_T} \frac{\partial D_T}{\partial \beta} = \text{elasticity of the shift in tourist demand}$$

We first obtain the determinant of the above system. This turns out to be:

$$D = Z L_{\text{NA}} \left[-\frac{\alpha \tilde{w}}{P_N} \left(\frac{\partial D_R}{\partial P_N} \frac{P_N}{D_R} + \frac{\partial D_T}{\partial P_N} \frac{P_N}{D_T} \right) C'' - \frac{\bar{w}E}{P_N N} m_R \right] + L_{\text{NA}} \lambda_{\text{LSX}} \lambda_{\text{LSY}} (k_{\text{XS}} - k_{\text{YS}})$$

and

$$Z = \lambda_{LSX}\lambda_{LN}\lambda_{LY}(k_Y - k_N) - \lambda_{LSY}\lambda_{LN}\lambda_{LS}(k_X - k_N)$$

For any meaningful analysis the determinant D must be assigned a sign. This determinant consists of factor intensities, price elasticities, terms from the migration function and income terms. We shall make some reasonable assumptions about this determinant. First, we shall assume that $k_Y > k_X > k_N$ and $Z > 0$. This implies that not only that the services sector is most labour intensive, but also that the first term of Z outweighs the second term. We shall also assume that, sector, X , is skilled labour intensive vis-a-vis the Y sector. Inside the bracket in the ZL_{NA} term there are price and income effects. We shall assume that the price effect dominates the income terms, hence, the bracketed expression is positive and on the basis of our assumptions $D > 0$.

It is appropriate now to analyse the impact of a shift in tourism on our endogenous variables. The solutions for employment, illegal migration, resident income and welfare, the relative price of non-traded good and the change in the wage via α of the illegal migrant labour are given below:

$$\hat{E} = \frac{L_{NA}Z}{D} \beta_T \hat{\beta} \quad (17)$$

$$\hat{L}_{NA} = \frac{Z[C'C'' - C]}{D} \beta_T \hat{\beta} \quad (18)$$

$$\hat{N} = \frac{\lambda_{LSY}\lambda_{LSX}(k_{XS} - k_{YS})}{D} \beta_T \hat{\beta} \quad (19)$$

$$\hat{D}_N = \frac{\theta_{WLNA} L_{NA} C'' Z}{D} \beta_T \hat{\beta} \quad (20)$$

$$\alpha = -\frac{C'' Z}{D} \quad (21)$$

$$\hat{P}_N = -\frac{\theta_{WLNA} C'' Z}{D} \beta_T \hat{\beta} \quad (22)$$

From equation (15) it is easy to derive an expression for change in resident welfare and income as given below:

$$\hat{I}^R = \theta_{WR} \hat{E} = \frac{\theta_{WR} L_{NA} Z}{D} \beta_T \hat{\beta} \quad (23)$$

Proposition 1:

An increase in tourism necessarily raises domestic employment and income provided that D and Z are identically signed.

Proposition 2:

An increase in tourism increases the inflow of illegal migrants provided $C'C'' - C > 0$, $Z > 0$, $D > 0$ and decreases, α , increases the wage differential between local and illegal workers.

We now proceed to offer several comments on the above propositions. In the model under consideration, three outputs and three factors of production are involved: outputs X, Y and N and factors K, E, L (also L_{NA}). An increase in tourism, by definition, implies that the demand curve for the consumption of non-traded goods and services increases. This increase transmits itself into the rest of the economy. First, it raises domestic employment under the conditions specified in the model as shown by equation (17). Second, as is clear from equation (23) changes in resident income depends on domestic employment. Since this increases an expansion in tourism raises domestic welfare as shown by equation (23).

The story of expansion in tourism as far as the illegal migrants are concerned is not positive compared with domestic residents. Equation (18) shows that $\hat{L}_{NA} > 0$, hence, expanded tourism increases the inflow of illegal migration. An increase in domestic employment raises the term E/\bar{E} in the migration function and this increase provides an incentive for increased illegal migration. An increase in this migration raises the supply of illegal workers which depresses their wage as shown by the fall in the value of α (from equation (22)). If α is regarded as an exploitation factor, then this exploitation increases on account of expansion of tourist trade. Since α falls it implies that exploitation increases as illegal migrants receive a lower wage. More importantly the relative price of the non-traded goods falls thus illegal migrants help in lowering the price of non-traded goods and services thereby making the economy more competitive in the international tourist market. The supply effect dominates the demand effect leading to a fall in the relative price of the non-traded goods.

IV Conclusion

This paper establishes a relationship between illegal migrants and tourism. Under certain conditions it shows that expanded tourism, inspite of a wage distortion is welfare increasing for domestic residents. However, this is not the case for illegal migrants whose welfare falls as a result of expansion in tourist trade - their wages fall and illegal migration increases. We have established that under certain conditions illegal migrants help the tourist trade - no wonder several European countries turn a blind eye towards them.

Notes

1. Tourist demand is introduced in the model in the same manner as in Hazari and Kaur (1995) and Nowak, J.J. and Sahli (1998).
2. For an elaboration of these points see Hazari and Ng (1992).
3. The migration function used in equation (4) is a variant of a similar function used by Chesney, Hazari and Sgro (1998).

References

Chesney, M., Hazari, B.R. and P.M. Sgro, “Immigration, Unemployment and Welfare”, forthcoming *International Economic Journal*.

Hazari, B.R. and C. Kaur (1995), “Tourism and Welfare in the Presence of Pure Monopoly in the Non-Traded Goods Sector”, *International Review of Economics and Finance*, 4(2), pp. 171-177.

Hazari, B.R. and A. Ng (1993), “An Analysis of Tourists’ Consumption of Non-Traded Goods and Services on the Welfare of the Domestic Consumers”, *International Review of Economics and Finance*, 2, pp. 43-58.

Nowak, J.J. and M. Sahli (1998), “Tourisme International, Intrants Importes Et Revenus”, IREST-Universite de Paris I - Pantheon, Sorbonne, mimeographed.