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DUTY FREE ZONE AND UNEMPLOYMENT IN A FAIR WAGE MODEL*

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Abstract: A three sector model of a small open economy has been developed with fair wage effort hypothesis. If fiscal concessions are given to the foreign enclave, then unemployment is increased in the absence of technology transfer. If the expansion of the foreign enclave (duty free zone) leads to technology transfer in the capital intensive domestic sector, unemployment is increased at a higher rate. However, unemployment may be reduced when the technology transfer takes place in the labour intensive domestic sector.

1. INTRODUCTION

There exists a vast literature on the effects of the formation of the foreign enclave (duty free zone) on the social welfare of a small open economy. One set of literature deals with full employment models of Heckscher-Ohlin-Samuelson (HOS) type. The other set of literature which includes the works of Young and Miyagiwa (1987), Dutta Chaudhuri and Adhikari (1993), Young (1992), Gupta (1994), Miyagiwa (1993) etc. considers a Harris-Todaro (1970) structure; and hence analyse the effect of the formation of the foreign enclave (duty free zone) not only on the social welfare but also on the unemployment.

Harris-Todaro (1970) type of model is one way of analysing unemployment as a general equilibrium phenomenon. However, in such a model, unemployment is specific to the urban sector only. A different type of model, often known as efficiency-wage model, is also used to analyse unemployment as a general equilibrium phenomenon; and the literature in this area includes the works of Solow (1979), Brecher (1992), Copeland (1989), Summers (1988) etc. Labour is measured in efficiency unit; and the efficiency is assumed to be a positive function of the wage rate and the level of unemployment. The rationale behind this efficiency function can be obtained from the works of Shapiro and Stiglitz (1984). However, there is no intersectoral wage gap in these models. On the other-hand, labour efficiency is exogenous in the Harris-Todaro (1970) type of models;

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and the rural urban wage gap explains the existence of the urban unemployment in the migration equilibrium there.

Fair wage models are more generalized versions of the Solow (1979) type of efficiency wage model. Feher (1991), Agell and Lundborg (1992, 1995), Akerlof and Yellen (1990), etc. have explained unemployment as a general equilibrium phenomenon using the fair wage-effort hypothesis. In Agell-Lundborg (1992, 1995) specification of this fair wage effort hypothesis, efficiency of a worker is sensitive to the functional distribution of income. Hence the rate of profit appears to be an additional argument in the efficiency function.

The objective of this paper is to analyse the effect of the formation of the foreign enclave (duty free zone) on the level of unemployment in a small open economy using a fair wage model. Following Young and Miyagiwa (1987) and Dutta Chaudhuri and Adhikari (1993), we define the formation of the foreign enclave (duty free zone) as the increase in the effective producer's price of that sector's product (resulting from tax-concessions or subsidization).[1] We consider a three sector model with one type of labour and two types of capital. Foreign capital is specific to the foreign enclave and the domestic capital is mobile between the two subsectors of the domestic enclave. All the commodities are assumed to be internationally traded. This is a structure common to almost every work in this area. The special properties of our three sector model are the followings: (i) We consider fair wage-effort hypothesis to explain unemployment; and our efficiency function is similar to that in Agell and Lundborg (1992, 1995). So the labour-endowment (measured in efficiency unit) appears to be an endogenous variable in this model. (ii) We assume that the foreign investment leads to technological advancement in the domestic subsectors of the economy. Existing literature based on the three sector models have not considered these two aspects.

The major results related to the effects of the formation of the foreign enclave are the followings. Unemployment is always increased in the absence of the technology transfer. However, in the presence of the technology transfer, unemployment is increased at a higher rate when the benefit goes to the capital intensive domestic sector. However, if the technological advancement takes place in the labour intensive domestic sector, unemployment may be reduced. The results are interesting as compared to those in Young and Miyagiwa (1987) and Dutta Chaudhuri and Adhikari (1993) who have done similar exercises using the Harris-Todaro (1970) structure and without considering technology transfer. In Young and Miyagiwa (1987), unemployment is reduced. But in Dutta Chaudhuri and Adhikari (1993), the effect is indeterminate.

The paper is organized in the following way. The basic model is described in section 2. The effects of the formation of the foreign enclave (duty free zone) are analysed in section 3. Concluding remarks are made in section 4.

[1] In Young and Miyagiwa (1987) and Dutta Chaudhuri and Adhikari (1993), the effective producer's price is increased through the reduction in the import duties on the intermediate goods.

2. THE MODEL

The economy considered in this model is a small open economy consisting of three sectors-two domestic enclaves and a foreign enclave. Domestic capital is mobile between the two domestic sectors; and foreign capital is specific to the foreign enclave. All the commodities are internationally traded. Labour is assumed to be perfectly mobile among the three sectors.

Labour is measured in efficiency unit. The production function in each of the three sectors satisfies all the standard neo-classical properties including CRS. All the markets are perfectly competitive. Both the capitals are fully utilized and a part of the labour force remains unemployed. Wage rate is determined minimizing the ratio of wage to efficiency. Efficiency per worker depends on the wage rate, the interest rate and the level of unemployment.

The stock of domestic capital is exogenously given. However, the supply of foreign capital is a positive function of the rate of interest in the foreign enclave. Also the inflow of foreign capital leads to technology transfer in the domestic enclave.

Government of the host country may either subsidize or tax the production in the foreign enclave. Given the price of its product in the world market, producer's effective price is increased when the government raises the rate of subsidy or lowers the tax rate per unit of output. This increase in the producer's effective price of the product produced in the foreign sector is defined as the formation of the foreign enclave (duty-free zone).

The two domestic subsectors are represented by the subscripts—1 and 2; and the subscript, F, denotes the foreign enclave. The other notations used in the model are the followings:

j = 1, 2 and F.
X_j = Level of output in the jth sector.
L_j = Level of employment in the jth sector (expressed in efficiency unit).
k_j = Capital labour ratio in the jth sector.
N_j = Number of workers employed in the jth sector.
e = Efficiency per worker.
W = Wage rate per worker.
r = Interest rate on domestic capital.
P_j = Effective producer's price of the jth sector's product.
C_j = Average cost of production in the jth sector.
U = Number of unemployed workers.
$\bar{N}$ = Total number of workers in the economy.
K_D = Stock of domestic capital.
K_F = Supply of foreign capital.
f_j = Intensive production function in the jth sector.
r_F = Interest rate on foreign capital.

The equational structure of the model is described as follows:—

$$X_j = A_j f_j(k_j) L_j \quad \text{with} \quad f_j' > 0 \quad \text{and} \quad f_j'' < 0 \qquad (1), (2) \text{ and } (3)$$

For j = 1, 2 and F. However, $A_F = 1$.

$$k_1 L_1 + k_2 L_2 = K_D \tag{4}$$

$$k_F \cdot L_F = K_F \tag{5}$$

$$K_F = K_F(r_F) \text{ with } K_F' > 0 \tag{6}$$

$$A_j \cdot P_j = C_j((W/e), r) \tag{7 and 8}$$

for $j = 1$ and 2.

$$P_F = C_F((W/e), r_F) \tag{9}$$

$$L_1 + L_2 + L_F = e \cdot (\bar{N} - U) \tag{10}$$

$$e = e(W, r, r_F, U) \tag{11}$$

and this satisfies the following restrictions:

$$(\partial e/\partial W) > 0;\ (\partial e/\partial r) < 0;\ (\partial e/\partial r_F) < 0;\ \text{and}\ (\partial e/\partial U) > 0.$$

$$(\partial e/\partial W)(W/e) = 1 \tag{12}$$

$$A_j = A_j(K_F) \text{ with } A_j' > 0 \tag{13 and 14}$$

for $j = 1$ and 2.

Here e is the efficiency per worker and (W/e) is the effective wage rate when labour is measured in efficiency unit. $(\bar{N} - U)$ workers are employed; and hence, $e \cdot (\bar{N} - U)$ is the total employment in the economy (expressed in efficiency unit). A_j is the parameter representing Hicks-neutral technical progress and the production function is linear homogenous in terms of capital and labour. Hence (C_j/A_j) is the effective unit cost of the product for $j = 1$ and 2. The readers working on the two sector models should be familiar with the equations (1) to (10). However, we are to explain the equations (11), (12), (13) and (14).

Equation (11) is the efficiency function of the worker. It states that this efficiency varies positively with the wage rate and the level of unemployment and negatively with the rate of return on capital (rate of profit). If there is a positive probability that the worker caught shirking will be fired and will be replaced by another worker from the unemployment pool, then the efficiency of the representative worker should vary positively with the wage-rate and the unemployment level.[2] This is the shirking theory of efficiency and unemployment as developed by Shapiro and Stiglitz (1984), Pisauro (1991) etc. A set of recent works which includes Carruth and Oswald (1989, Chapter 6), Layard (1991, Chapter 3), Katz (1986) etc. show that bad morale and low productivity may occur if the relative returns to capital and labour deviate from the worker's notion of a fair functional distribution of income. Combining these two aspects, Agell and Lundborg (1992, 1995) have developed the fair wage-effort hypothesis in which the efficiency of the worker varies positively with unemployment and wage and negatively with the rate of return on capital. A clear analysis of the micro-foundation of the equation (11) is available in the Appendix (A).

[2] As the labour endowment, $\bar{N}$, is given, the level of unemployment, U, and the rate of unemployment; $(U/\bar{N})$, are proportionally related.

In some countries of the third world which were colonies of the Western countries a few decades back, there exist a strong nationalist sentiment and negative attitude towards the inflow of foreign capital. Repatriation of profit of the foreign firms is often viewed as an economic drain. The unionism of the workers and the rise of the leftist thought among the union leaders have contributed a lot to make the workers thinking profit-repatriation as unfair. India is a classic example of this case. In the light of this nationalist sentiment of the workers, we assume that the repatriation of profit of foreign producers produces a negative effect on the work morale and effort norms of the workers; and hence $(\partial e/\partial r_F) < 0$ in the efficiency function (11).[3] However, this effect should be stronger on the workers working in the foreign enclave than on the workers in the domestic enclave though, for the sake of analytical simplicity, we assume identical effect on all the workers.

Equation (12) is the first order condition of minimization of (W/e) with respect to W; and the representative employer does this. The sufficient condition for minimization is also satisfied if $(\partial^2 e/\partial W^2) < 0$. This equation (12) implies that the wage elasticity of efficiency is equal to unity in equilibrium. We assume that a special mathematical property is satisfied by the efficiency function. It is given by

$$e(W, r, r_F, U) = \phi(W) \cdot \psi(r, r_F, U) \tag{11.1}$$

So this elasticity of efficiency with respect to W is the function of W only[4] and is independent of r and U. Hence we can obtain a unique equilibrium value of W solving the equation (12). This equation is actually the traditional Solow (1979) condition.

The separation of the wage-variable, W, from the other variables in the efficiency function can be justified as follows. The efficiency of the worker is assumed to be a product of the physical efficiency and non-physical efficiency. The physical (nutritional) efficiency of the worker varies positively with his level of consumption, and wage income is his only source of consumption. Other variables—unemployment rate and interest rate—do not affect the physical efficiency. The presence of unemployment makes the workers more disciplined and the low rate of earnings of the capitalists improves the motivation of the worker through a favourable income distribution effect.

[3] This property can also be derived from the exercises made in the Appendix (A) if the disutility of the worker, V, is the negative function of the rate of profit in the foreign enclave, r_F.

[4] Consider

$$e(W, r, r_F, U) = \phi(W) \cdot \psi(r, r_F, U)\,.$$

In this case,

$$(\partial e/\partial W) = \phi'(W) \cdot \psi(r, r_F, U)$$

or,

$$(\partial e/\partial W)(W/e) = \phi'(W) \cdot (W/\phi(W))\,.$$

Hence the equation (12) implies that

$$\phi'(W) \cdot (W/\phi(W)) = 1\,.$$

This specification of the efficiency function ensures the optimum efficiency wage to be independent of unemployment and capital-returns; and this property simplifies the mathematical working of the model. However, we should admit that the negative correlation between the efficiency wage and unemployment is a common property of many efficiency wage models. Additional conditions may be required to maintain the validity of the major results of this model when this property is not satisfied.

But the efficiency caused by discipline and motivation should be distinguished from the physical efficiency. Higher wage also raises motivation though we rule out this possibility by this simplification.

Equations (13) and (14) are the technology transfer functions; and these are borrowed from Koizumi and Kopecky (1977, 1980), Mansfield (1961, 1968) etc. Technology transfer in the domestic sub-sectors of the economy takes place through foreign investment.[5] With the inflow of foreign capital the residents of the host country come into contact with foreign entrepreneurs who possess superior technical skills and knowhow. The transmission of the technology from the foreigners to the residents of the host country takes place through observation, discussion and training. This transmission is a spillover or external effect on the host country.

We now describe the working of the model. In a standard three sector competitive model of a small open economy, price system and quantity system are dichotomized. Factor prices are determined independent of factor endowments. But in this model the technology transfer functions make the two systems integrated; and so the working becomes a little bit more complicated. Here P_1, P_2, P_F, K_D and $\bar{N}$ are the parameters; and the fourteen equations determine the values of fourteen unknowns—X_1, X_2, X_F, L_1, L_2, L_F, K_F, W, r, r_F, e, U, A_1 and A_2. Equation (12) solves for the equilibrium value of the wage rate, W. Then the equations (6), (7), (8), (9), (13) and (14) simultaneously solve for the equilibrium values of the six unknowns—(W/e), r, r_F, K_F, A_1 and A_2. As W is already determined, one can get the value of e too. Then the equation (11) solves for U.[6] Once the factor prices—(W/e), r and r_F—are determined, the capital intensities—k_1, k_2 and k_F—become known. L_F can be obtained from the equation (5); and then the equations (4) and (10) solve for L_1 and L_2. At last, equations (1), (2) and (3) are used to determine the values of X_1, X_2 and X_F.

So in this model labour is measured in efficiency unit and the equilibrium level of unemployment is determined by the efficiency function given by the equation (11). But the number of workers is finite and hence the labour availability constraint is binding. So with a binding capital-constraint and the CRS production functions, we have a nonlinear production-possibility locus in the 2×2 domestic subsystem. This rules out the possibility of corner-solution in the output-space. In a model of the labour surplus economy of Brecher (1974) type, labour supply is unlimited; and hence capital availability is the only binding constraint. So the production possibility locus contains a linear segment there leading to an equilibrium with complete specialization.

[5] For more generalized technology transfer functions, see Findlay (1978).

[6] In the Appendix (A), where the microfoundations of the effort function are given, effort appears to be a function of unemployment. But in the general equilibrium model, effort gets determined first and then this solves for the level (rate) of unemployment. In a small open economy, given the product prices, we can always determine the equilibrium values of the real wage-rate, (W/e) and the rates of interest $-r$ and r_F. If the optimum wage-rate, W, as obtained from equation (12) is the function of the unemployment-rate, then unemployment gets determined first and equation (11) solves for effort, e. But, in the present model, $(de/dW)(W/e)$ is assumed to be independent of U and r; and this simplifying assumption makes optimum W to be independent of U and r. Hence the value of e gets determined first and then equation (11) solves for U.

There are two major points of difference between the present model and any Arthur Lewis type fixed wage model. (i) In the present model, domestic capital is perfectly mobile between the two domestic sectors. But in any Arthur Lewis type model, all the sectors use sector-specific capital. (ii) In the present model, labour efficiency is endogenous to the system and is a function of wage-rate, unemployment rate and the rate of return on capital. But in the Lewis model, labour efficiency is exogenous to the system. The sector specific capital-endowments in Lewis model determine the sector specific equilibrium level of employment; and hence the labour-endowment constraint there is used to determine the unemployment as a residual. But in the present model, we have three sectors with two different capital stocks. So in order to determine the sector specific level of employment in the three sectors, we need the labour-endowment equation in addition to the two capital endowment equations. Hence unemployment can not be residually determined here; and we need a separate theory of unemployment with an endogenous efficiency function sensitive to the unemployment-rate.

3. FORMATION OF THE FOREIGN ENCLAVE

Government of the host country expands the foreign enclave through fiscal concessions; and this leads to an increase in the effective producer's price, P_F, of the product. In this section, we analyse the comparative static results with respect to change in P_F.

Using equations (6), (13) and (14), we can modify the equations (7), (8) and (9) as follows:

$$P_1 A_1(K_F(r_F)) = C_1((W/e), r) \tag{7A}$$

$$P_2 A_2(K_F(r_F)) = C_2((W/e), r) \tag{8A}$$

and

$$P_F = C_F((W/e), r_F) \tag{9A}$$

This reduced system summarised by the equations (7A), (8A) and (9A) shows that there are three endogenous variables—(W/e), r and r_F. Here (W/e) is denoted by x. Using the comparative static exercises with respect to P_F, we can establish the following proposition.[7]

PROPOSITION 1. *The increase in the effective producer's price of the product produced in the foreign enclave always raises the rate of return on foreign capital. In the absence of technology-transfer, it does not affect the real wage rate and the rate of interest on the domestic capital. In the presence of technology-transfer, this raises (lower) the real wage rate and lowers (raises) the rate of interest on domestic capital if the technological progress takes place in the labour (capital) intensive domestic sector.*

In the absence of the technology transfer to the domestic sectors, equations (7A) and (8A) solve for the equilibrium values of (W/e) and r; and these are independent of r_F. So the rise in P_F leads to an increase in r_F through the equation (9A) in this case.

[7] Mathematical derivations of the results are available in the Appendix (B).

However, if technology transfer takes place, then equations (7A) and (8A) solve for (W/e) and r as function of r_F.

If the price of the foreign sector's product is increased then, in the presence of the technology transfer to the domestic subsectors, we find a Stolper–Samuelson effect on the real wage rate and the rate of return on domestic capital. The increase in the rate of return on foreign capital raises the supply of foreign capital which in turn leads to technological advancement in the concerned domestic subsector. This causes a downward shift of the average cost function of the domestic sector. So this effect is similar to the effect of the rise in the price of that sector's product. But this effect does not exist in the absence of the technology transfer because then the average cost curves in the domestic subsectors do not shift downwards.

From equation (11), we have,

$$(W/x) = e(W, r, r_F, U) \tag{11A}$$

and its total differential is given by

$$-(W/x^2)dx + (1/x)dW = (\partial e/\partial W)\cdot dW + (\partial e/\partial r)dr + (\partial e/\partial r_F)dr_F + (\partial e/\partial U)dU \tag{11B}$$

Equation (12) implies that

$$(\partial e/\partial W) = (1/x);$$

and hence, from (11B), we have

$$(dU/dP_F) = \frac{(W/x^2)(dx/dP_F) + (\partial e/\partial r)(dr/dP_F) + (\partial e/\partial r_F)(dr_F/dP_F)}{-(\partial e/\partial U)}$$

Note that, $(\partial e/\partial r) < 0$; $(\partial e/\partial r_F) < 0$; and $(\partial e/\partial U) > 0$. Also it is proved that $(dr_F/dP_F) > 0$. If the technology transfer takes place in the capital intensive domestic sector then $(dx/dP_F) < 0$ and $(dr/dP_F) > 0$. Hence, in this case, $(dU/dP_F) > 0$. But if the technology transfer takes place in the labour intensive domestic sector, then $(dx/dP_F) > 0$ and $(dr/dP_F) < 0$. Therefore (dU/dP_F) may have any sign.

In the absence of the technology transfer,

$$(dx/dP_F) = (dr/dP_F) = 0; \quad \text{and hence}$$

$$(dU/dP_F) = -\frac{(\partial e/\partial r_F)\cdot(dr_F/dP_F)}{(\partial e/\partial U)} > 0.$$

This leads to the following proposition:

PROPOSITION 2. *The rise in P_F raises the unemployment level in the absence of the technology transfer. If the technology transfer takes place in the capital intensive domestic sector, then this raises the level of unemployment at a rate higher than the rate of increase in the absence of the technology transfer. However, the effect on the unemployment is indeterminate when the technological progress takes place in the labour intensive domestic sector.*

The intuition behind this result is the following. The formation of the duty free zone raises the rate of profit there. This produces a negative effect on the efficiency function.

In the absence of the technology transfer to the domestic sectors, (W/e) and r remain unchanged. So, in this case, the only way to maintain the equilibrium level of efficiency is to raise the level of unemployment.[8] In the presence of the spillover effect, (W/e) rises (falls) and r falls (rises) when the technological advancement takes place in the labour (capital) intensive domestic sector. So there is an additional positive (negative) effect on the efficiency function in this case. Hence unemployment should be increased at a higher rate in the presence of the technology transfer to the capital-intensive domestic sector than that in its absence. But it may be increased at a lower rate or even may be reduced in the case of this spillover effect on the labour-intensive domestic sector.

Note that the results summarized in the proposition are valid only when the fair wage-effort hypothesis is considered i.e., the efficiency of the worker is affected by the functional distribution of income. In the conventional efficiency-wage model, efficiency of the worker is assumed to vary positively with wage and with unemployment. In that case, $(\partial e/\partial r) = (\partial e/\partial r_F) = 0$. Hence $(dU/dP_F) = 0$ in the absence of the technology transfer. However, in the presence of the technology transfer,

$$(dU/dP_F) = -\frac{(W/x^2)\cdot(dx/dP_F)}{(\partial e/\partial U)}.$$

(dx/dP_F) is positive (negative) when the technology transfer takes place in the labour (capital) intensive domestic sector; and hence (dU/dP_F) is negative (positive) in that case.

Now we can establish the following proposition.

PROPOSITION 3. *If the efficiency of the worker is independent of the rate of return on capital, then the increase in P_F does not affect the level of unemployment in the absence of the technology transfer. But this raises (lowers) the level of unemployment if the technology transfer takes place in the capital (labour) intensive domestic sector.*

The special case is important because it includes all other previous works, e.g. Solow (1979), Shapiro and Stiglitz (1984), Pisauro (1991), Brecher (1992) etc.

It may be somewhat hard to see why workers in the domestic sectors should react negatively on the increases in the return to foreign capital. It can be questioned if the explanations offered are of general empirical relevance or limited only to the radical segment of the work force. As the explanations offered may not be of general empirical relevance and as also we can not supply the micro foundation of $(\partial e/\partial r_F) < 0$, we find it better to do the comparative static exercises in a fair-wage model in which $(\partial e/\partial r_F) = 0$ and $(\partial e/\partial r) < 0$, i.e., in a fair wage model identical to that of Agell and Lundborg

[8] The increase in r_F raises K_F and this in turn raises L_F. But this increase in L_F has no additional effect on U. Once the increase in the value of U is determined from the efficiency function, the increase in L_F is matched by a corresponding decline in $(L_1 + L_2)$. This leads to an expansion of the capital intensive domestic sector and a contraction of the labour intensive domestic sector. But this labour reallocation has no additional effect on unemployment.

(1992, 1997). In this case

$$(dU/dP_F) = \frac{(W/x^2)\cdot(dx/dP_F) + (\partial e/\partial r)(dr/dP_F)}{-(\partial e/\partial U)};$$

and one can easily show that the results obtained in this model are similar[9] to those summarized in the Proposition 3.

Throughout the entire exercise we assume that only one of the two domestic sectors receives technology spillovers from the foreign enclave. It is desirable to present a general case in which transfer occurs to both the sectors. In that case, the nature of the effect of the creation of the duty free zone on the factor prices and unemployment will be determined by the relative strength of the two spillover effects. This becomes clear if one looks at the expressions of J, J_x, J_r and J_F.

One of the important objectives of creating foreign enclave in a less developed economy is to reduce the level of unemployment there. Our analysis based on a fair wage model shows that it is not necessarily fulfilled. Unemployment may be reduced only if the expansion of the foreign enclave leads to technological progress in the labour intensive domestic sector. This is an interesting result in the literature because the analysis based on the Harris–Todaro (1970) structure as available in Young and Miyagiwa (1987) and Dutta Chaudhuri and Adhikari (1993) show that the unemployment may be reduced even in the absence of the technology-transfer. So, while offering tax concessions or subsidies to the foreign firms, government of the host country must look into the possibility and the nature of the spillover effect. This point is not at all emphasized in the theoretical literature focusing on the desirability of the formation of the foreign enclave.

We now turn to analyse the effect of the formation of the DFZ on the social welfare. First, we consider the effects on the domestic factor income here.

The domestic factor income is given by the following:

$$Y = W(\bar{N} - U) + r\cdot K_D\,.$$

Hence,

$$(dY/dP_F) = -W\cdot(dU/dP_F) + K\cdot(dr/dP_F)\,.$$

In the presence of the technology transfer to the capital intensive sector, $(dU/dP_F) > 0$ and $(dr/dP_F) > 0$. So the sign of (dY/dP_F) is not unambiguious. This problem of ambiguity remains even in the case of technology transfer to the labour intensive sector because then $(dr/dP_F) < 0$ and (dU/dP_F) may take any sign.

However, in the absence of the technology transfer, $(dr/dP_F) = 0$; and hence

$$(dY/dP_F) = -W\cdot(dU/dP_F) < 0$$

because $(dU/dP_F) > 0$ in this case. Hence we have the following proposition.

PROPOSITION 4. *The rise in P_F leads to a decrease in the domestic factor income in the absence of the technology transfer. However, in the presence of the technology transfer, this effect is indeterminate.*

[9] Similarities are obtained only in sign and not in magnitude.

If the increase in P_F is the result of the subsidization to the F-sector and the subsidy is financed by taxing the domestic factor income, then national income is reduced at a higher rate when domestic factor income falls. Given the consumers' prices of the three products, the rate of change in social welfare is measured by the rate of change in national income.

4. CONCLUSION

In this paper we have developed a three sector model of a small open economy with fair wage-effort hypothesis. This hypothesis explains involuntary unemployment as a general equilibrium phenomenon. Then we analyse the effect of the expansion of the foreign enclave (through policies of tax concessions and subsidization to that sector) on the equilibrium level of unemployment. It appears that the expansion of the foreign enclave does not necessarily lower the level of unemployment even if it leads to technology transfer; and always raises unemployment in the absence of the technology transfer. So while attracting the foreign firms, the government of the host country should not have a policy of blind favour when the objective is to create additional employment opportunities. One should look into the details of the nature of the product and the technology because these will determine the possibility and the nature of the technology transfer. The policy-makers of the less developed countries should take care of this problem while designing the policies of liberalisation and structural reforms.

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