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Trade Liberalization under New Realities

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Abstract

The last decade has witnessed significant influx of direct foreign investment in developing countries. The increased flow of foreign investment has contributed to the ability of developing countries to produce import competing manufactured goods by combining imported and domestically produced inputs. This situation has to some extent changed the comparative advantage of developing countries. Within the context of this development, this paper attempts to examine the effectiveness of devaluation and other import restricting polices. The paper argues that trade liberalization remains the most desirable policy. Specifically a cut in import and export duties are found to be beneficial both in the short-run and the long-run.

Key Words: Trade Liberalization, Developing Countries, Devaluation

I. **Introduction**

Increasing pace of globalization has resulted in a greater push for trade liberalization. A number of recent studies have examined the impact of trade policy reforms on developing countries. After some hesitation up until the early 1980s, developing countries such as China and India are now eager to take advantage of opportunities offered by trade liberalization. Prior to this, LDCs have had largely pursued mainly export promoting and import blocking polices. In some cases, currency devaluation, a policy supported by the IMF, has been used to achieve this objective.[1] In fact, IMF thinking is influenced by the belief that currency devaluation increases competitiveness. However, this view is largely based on a strong presumption of demand driven economy. The end of the cold war and improvements in communication technology appear to have drastically changed the complexion of the world. In order to take advantage of cheaper labour cost, relatively unregulated production, closer proximity to the market (in some cases), multinational corporations have started moving from developed to less developed and emerging economies.

Lewis-Bynoe, Griffith and Moore (2002) suggest that the lack of competition in developing countries has resulted in highly concentrated domestic industries that suffer from diseconomies of scale. They argue that liberalization can reverse this trend but at a cost. By utilizing an import demand framework, they examine the potential impact of trade liberalization on the manufacturing sector in Barbados. Based on the empirical investigation, they argue that manufacturing industry could encounter tremendous price competition, which can potentially compromise the survival of these industries.

Greenway, Morgan and Wright (2002) argue that, over the past two decades, trade liberlisation in developing countries has been implemented with the expectation of economic growth. However, the there is no clear evidence that such policies lead to economic growth. They argue that the mixed results can be attributed to misspecification

[1] It is well known that, within the context of a fixed price model, if Marshall Lerner's condition is satisfied i.e., the sum of export and imports elasticities exceeds unity, currency devaluation increases output and improves the balance of payments. For recent discussion of various aspects of fixed versus flexible exchange rates, see Reinhart and Rogoff (2004) and Shambaugh (2004).

and the diversity of liberalization indices used. They also argue that there is some evidence suggesting that the impact of trade liberalization takes place with a lag. The evidence appears to suggest a *J* curve type response.

Santos-Paulino (2002) has found trade liberalisation to be a significant determinant of export performance. However, its impact varies across countries. Specifically, export duties have a small negative effect on export growth. In a recent study, Santos-Paulino (2004) has attempted to estimate the effect of trade liberalisation on the balance of trade and the balance of payments for 22 developing countries that have adopted trade liberalisation policies since the mid-1970s. Santos-Paulino reports that trade liberalisation has largely resulted in the worsening of the balance of trade and payments. Based on the evidence presented in their study, Santos-Paulino appears to argue that developing countries should not embrace trade liberalization polices without giving due consideration to its potential harmful effect on growth of output and living standards.[2] Winters, McCulloch and McKay (2004) examine the evidence on the impact of trade policy reform on poverty in developing countries. Their work focuses on four aspects: economic growth and stability; households and markets; wages and employment and government revenue. They argue that while in the long run, and on average, trade liberalization is likely to reduce poverty, the situation is not so certain in the short-run. Arbache, Dickerson and Green (2004) examine the impact of trade liberalisation on wages in developing countries. While focusing on Brazil, they found that trade liberalisation has resulted in a significant decrease in wages in the traded sector which could be attributed to increased competition.

Developing Contrary are attempting to increase the share of the manufacturing production as a percentage of the GDP by producing import competing goods such as TV, fridges, automobiles, etc. Presently, most of the Christmas ornaments sold in developed countries such as the US, Canada and Australia are manufactured in China. This also applies to other consumer goods such as textile products and increasingly to consumer electronics. Silicon Valley firms are developing software in India. The Mexican border hosts a large number of assembly plants from dozens of countries around

[2] For a discussion of closely related issue see Santos-Paulino and Thirlwall (2004).

the world. For this very reason, during the last round of WTO sponsored negotiations, developing countries such as India and Brazil forged a common front to seek grater access to the markets of industrial countries for agricultural and manufacturing exports. Last but not least, the accession of China and Taiwan in WTO is likely to greatly influence the future trade pattern.

In order to produce imports competing final goods, LDCs are heavily relying on the imports of the relevant intermediate goods. In such a case, blockage of imports in all form including by means of currency devaluation seems detrimental. As a matter of fact a strong currency is now what LDCs should aim for. In fact the US government and other western nations are trying to convince China to revalue its currency. This strategy if adopted by China is also likely to control China's growing trade surplus with the US and other countries - revaluation of yuan would increase the demand for imported goods in China thereby producing a much needed boost to the economies of its major trading partners. Many papers have been written which challenge the use of devaluation as a tool to rectify economic problems. This includes early but very important studies by Hirschman (1949), Diaz Alejandro (1963), Cooper (1971) and Krugman and Taylor (1978). In late 70's and mid 80's, studies focused on adverse supply-side effects of exchange rate, for example Lizondo and Montiel (1989) Buffie (1986), Calvo (1983), Hanson (1983), Gylfason and Schmid (1983) and Shea (1976). Moreover, experiences of many LDCs with devaluation are also found less encouraging. In reply to this criticism IMF and other sister agencies pointed out that the problem with most of the LDCs is that they lack both fiscal and monetary discipline. The solution to this problem lies in the establishment of a truly independent central bank. Generally speaking, LDC governments are accused of excessive non-development expenditures and printing too much money.

This paper compares the short-run and long run effects of trade liberalization with currency devaluation under new realities (i.e., a situation where LDCs are producing import competing goods by utilizing import intermediate goods). The paper assumes throughout that the country in question is adherent to IMF conditions to observe

monetary and fiscal restraints. In other words, government totally relies on taxes to finance its expenditure and follow constant money supply rule.

II. A Simple Model

Since our emphasis is on imported inputs, we first explain the supply side of the model. It is assumed that the country in question produces one intermediate good (V) by using labour (*N*) and domestic capital (*K*) as follows:

$$V = f(N, \overline{K}) \qquad (1)$$

While the supply of capital is fixed, the supply of labour is determined by utility maximizing consumers. The above aggregate production function is assumed to be well behave and quasi-concave which implies that marginal productivity of each factor is positive but diminishing. In other words, the first order derivatives are positive whereas the second order derivates are negative.

The domestically produced input (*V*) is combined in fixed proportion with an imported input (*IM*) to produce a final good (*Y*) as follows where γ_1 and γ_2 are positive constants.[3]

$$Y = \text{Min}\left\{\frac{V}{g_1}, \frac{IM}{g_2}\right\} \qquad (2)$$

Labour supply function which can be formally derived from consumer utility maximization problem is as follows:

$$h(N, P) = W \qquad (3)$$

Where *W* and *P* respectively are the nominal wage rate and the price level. The optimal production of the final good is determined by maximizing the profit as follows:

[3] Given the nature of production of most of durables non-durable goods with imported inputs, the assumption of fixed technology is not so restrictive. The dependence on imported input can decrease overtime if and only if the domestic value added V becomes of high quality.

$$\underset{N,IM}{MAX:}\ \pi = pY - WN - ep^m(1+t^m)IM \qquad (4)$$

Where *e* is the exchange rate (i.e., the domestic price of one unit of foreign currency), p^m is the price of the imported input in foreign currency and t^m is the import duty. Substituting $Y = V/\gamma_1$, $IM = \gamma_1 V/\gamma_2$ and V = F(N) in equation (4) above implies

$$\underset{N}{Max}\ \pi = \left[p/\gamma_1 - ep^m(1+t^m)\gamma_2/\gamma_1\right]F(N) - WN \qquad (5)$$

The first and second order conditions of profit maximization are as follows:

$$\pi_N = \left[p/\gamma_1 - ep^m(1+t^m)\gamma_2/\gamma_1\right]F_N = W \qquad (6)$$

$$\pi_{NN} = [p/\gamma_1 - ep^m(1+t^m)\gamma_2/\gamma_1]F_{NN} < 0 \qquad (7)$$

The first and the second-order conditions will be satisfied if and only if

$$[p/\gamma_1 - ep^m(1+t^m)\gamma_2/\gamma_1] > 0 \qquad (8)$$

Equation (6) is the labor demand function. By combining equations (6) and (3), the following condition can be derived.

$$\left[p/\gamma_1 - ep^m(1+t^m)\gamma_2/\gamma_1\right]F(N) = h(N,p) \qquad (9)$$

Total differentiation of equation (9) while $e = p = p^x = p^m = 1$ and assuming that trade is balanced in the initial equilibrium (i.e., $X = IM$) implies that

$$dN = a_1\frac{dp}{p} + a_2\frac{de}{e} + a_3 dt^m \qquad (10)$$

where $a_1 = \frac{h}{J}\left[\delta - 1 - (1+t^m)\frac{\gamma_2 F_N}{\gamma_1 h}\right] > 0$, $a_2 = \frac{1}{J}\left[F_N(1+t^m)\gamma_2/\gamma_1\right] < 0$

$$a_3 = \frac{1}{J}\left[F_N \gamma_2 / \gamma_1\right] < 0,\ J = F_{NN}\left[1/\gamma_1 - (1+t^m)\gamma_2/\gamma_1\right] - h_N < 0$$

$\delta = \frac{\partial h}{\partial p}\frac{p}{h}$ measures the degree of money illusion. $\delta = 1$ implies no money illusion and $\delta = 0$ implies full money illusion. It is assumed that workers may have some degree of money illusion in the short-run. However, in the long-run workers are free of money illusion[4]. From equation (2) above we can write the following aggregate supply function:

$$Y = IM/\gamma_2 = V/\gamma_1 = F(N)/\gamma_1 \qquad (11)$$

Differentiating equation (11) and substituting the result in equation (10) leads to the following aggregate supply function (in deviation form) where $a = \frac{\gamma_1 \bar{Y}}{F_N N} > 0$

$$a\frac{dY}{Y} = a_1\frac{dp}{p} + a_2\frac{de}{e} + a_3 dt^m \qquad (12)$$

The demand side of the model is based on a fairly simple version of the monetarist approach to balance of payments. It is assumed that the country in question exports the final good in exchange for the intermediate inputs. The income expenditure identity is as follows.

$$Y = C + X + G \qquad (13)$$

where *X* is the value of exports, C and G respectively are consumption and government spending. Consumption is equal to difference between disposable income (Y^d) and real hoarding (H/p):

$$C = Y^d - H/p \qquad (14)$$

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[4] We may assume that $\delta = 1 - \exp^{-rt}$, for r > 0 it implies that as t gets larger δ approaches 1.

The disposable income is equal to the difference between gross income and taxes and real value of imported goods:

$$Y^d = (1-t)Y - T - \frac{ep^m(1+t^m)}{p} IM \qquad (15)$$

where t = tax rate and T = lump sum tax. Real hoarding is equal to the difference between desired money balances $\frac{M^d}{p}$ and the actual money balances $\frac{M}{p}$.

$$\frac{H}{p} = \psi\left[\frac{M^d}{p} - \frac{M}{p}\right] \qquad (16)$$

Real money demand is defined as a function of gross real income:

$$\frac{M^d}{p} = kY \qquad (17)$$

where *k* is a positive fraction. Finally, exports (X) is defined as a function of real export price net of export duty $(ep^x(1-t^x)/p)$ and foreign income (Y^f) as follows where t^x is export duty and p^x is foreign price of one unit of export.

$$X = X\left(\frac{ep^x(1-t^x)}{p}, Y^f\right) \qquad (18)$$

Another important feature of the model is the specification of the government budget constraint which is defined as follows:

$$G = tY + t^m\frac{ep^m}{p}IM + t^x\frac{ep^x}{p}X\left(\frac{ep^x(1-t^x)}{p}, Y^f\right) + T + \frac{\dot{M}}{p} \qquad (19)$$

Government collects revenues through income tax (*tY*), lump-sum taxes, *T*, import and export duties, and if necessary prints money $(\dot{M})$ to finance its deficit. Since LDCs

submission to IMF/World Bank and WTO conditionality is now much more profound, we assume that the country in question follows both fiscal and monetary restraints and merely relying on tax collections to finance its expenditures. In our model this could be achieved by dropping $\dot{M}/p$ term from equation (19) above.

This completes the basic structure of the demand side of the model. Using equations (13) to (19) and doing a series of manipulations and making use of $IM = \gamma_2 F(N)/\gamma_1$ leads to a reduced form solution for the aggregate demand function as follows:[5]

$$\psi kY = \left(1+\frac{t^x ep^x}{p}\right)X\left(\frac{ep^x(1-t^x)}{p}, Y^f\right) - \frac{ep^m}{p}\frac{\gamma_2}{\gamma_1}F(N) + \psi\frac{M}{p} \qquad (20)$$

Total differentiation of equation (20) while assuming that $e = p = p^x = p^m = 1$ and $X = IM$ in the initial equilibrium and substituting $dN/N = a\ dY/Y$ leads to the following equation.

$$b\frac{dY}{Y} = -\psi_1\frac{dp}{p} + \psi_2\frac{de}{e} + \psi_3\frac{dM}{M} - \psi_4 dt^x \qquad (21)$$

where $\psi_1 = \bar{X}(1+t^x)\left[\eta_x - \frac{1-t^x}{1+t^x} + \frac{\psi\bar{M}}{\bar{X}(1+t^x)}\right] > 0$, $\psi_2 = \bar{X}(1+t^x)\left[\eta_x - \frac{1-t^x}{1+t^x}\right] > 0$

$\psi_3 = \psi M > 0$, $\psi_4 = \frac{\bar{X}(1+t^x)}{(1-t^x)}\left[\eta_x + \frac{t^x}{1+t^x}\right] > 0$, $b = \bar{Y}[\psi k + \gamma_2] > 0$,

$\eta_x = \frac{\partial X}{\partial \tau}\frac{\tau}{X} = \text{export elasticity}$, $\tau = \frac{ep^x(1-t^x)}{p}$

[5] The reader can note here that in case of perfect capital mobility ($\psi \to \infty$) the demand function reduces to $M/p = kY$ i.e. for given k the demand for goods merely depend upon the real money supply.

ψ_2 is greater than zero because we are assuming that exports are either elastic or unitary elastic i.e., $\eta_x \geq 1$. The dynamics of the model is explained by the balance of payments condition as follows:[6]

$$\frac{\dot{M}}{p} = X\left(\frac{ep^x(1-t^x)}{p}, Y^f\right) - \frac{ep^m}{p} IM \qquad (22)$$

Total differentiation of equation (22) while assuming that $e = p = p^x = p^m = 1$ and that initially $X = IM$ and by making use of the condition that $IM = \gamma_1 F(N)/\gamma_2$ and $dN/N = a\ dY/Y$ implies that

$$d\dot{M} = \varepsilon_1 \frac{de}{e} - \varepsilon_2 \frac{dp}{p} - \varepsilon_3 dt^x - \varepsilon_4 \frac{dY}{Y} \qquad (23)$$

where $\varepsilon_1 = \varepsilon_2 = \bar{X}(\eta_x - 1) > 0$, $\varepsilon_3 = \frac{\bar{X}}{1-t^x}\eta_x > 0$, $\varepsilon_4 = I\bar{M} = \bar{X} > 0$

This completes the description of the model. Equations (12), (21), and (23) imply that in the impact period (i.e., in the short-run) there are three endogenous variables: *Y*, *P*, and $\dot{M}$. In the long-run *P*, *Y*, and *M* are be the endogenous variables as $\dot{M}$ approaches zero to ensure that the system is stable. The stability conditions can be derived by writing equations (12), (21), and (23) in a compact form as follows:

$$\begin{pmatrix} a & -a_1 & 0 \\ b & \psi_1 & 0 \\ \varepsilon_4 & \varepsilon_2 & 1 \end{pmatrix} \begin{pmatrix} d\ln Y \\ d\ln p \\ d\dot{M} \end{pmatrix} = \begin{pmatrix} a_2 & 0 & a_3 & 0 \\ \psi_2 & -\psi_4 & 0 & \psi_3 \\ \varepsilon_1 & -\varepsilon_3 & 0 & 0 \end{pmatrix} \begin{pmatrix} d\ln e \\ dt^x \\ dt^m \\ d\ln M \end{pmatrix} \qquad (24)$$

[6] We may add another dynamic equation by using wage setting rule: $\dot{W} = \alpha[N^d - \bar{N}] + \dot{p}$. In this case we assume that wages are momentarily fixed and changes over time. As it complicates the stability of the model and also that wages are sticky momentarily is quite restrictive we avoided this equation. Nevertheless, our model does capture the effect of change in wages through time as money illusion is subject to decrease (see footnote 2 above).

The above system is locally stable if and only if $d\dot{M}/dM < 0$. The following expression can be derived by making use of the above equations, where $\Delta = a\psi_1 + ba_1$

$$\frac{d\dot{M}}{d\ln M} = \frac{-\psi_3(a\varepsilon_2 + a_1\varepsilon_4)}{\Delta} \qquad (25)$$

Equation (25) shows that the equilibrium is stable if Δ is positive. This follows from the fact that $a, b, \psi_1, a_1 > 0$ and ψ_3, ε_2, and ε_4 are all greater than zero.

III. Devaluation: Short-run vs Long-run

In order to be able to compare trade liberalization with currency devaluation, we first derive results pertaining to the case of devaluation in the short-run. The system of equations (24) can be used to derive the impact of devaluation on production and the price level as follows:

$$\frac{d\ln Y}{d\ln e} = \frac{1}{\Delta}\left[(\delta - 1)\psi_2 + a_2\psi\bar{M}\right] \qquad (26)$$

$$\frac{d\ln p}{d\ln e} = \frac{a\psi_2 - ba_2}{\Delta} \qquad (27)$$

Because $\Delta > 0$, $0 \le \delta \le 1, \psi_2, a, b > 0$, and $a_2 < 0$, it is clear that devaluation decreases the production of the final good but its impact on the price level is positive. This implies that within the context of the present study, devaluation is stagflationary in the short-run. The intuition behind this result is quite straight forward. Devaluation makes imported inputs expensive and which leads to a shift in aggregate supply curve leftwards. Although devaluation gives impetus to exports, the increased price of domestic goods, however, crowds out some increased incentive and allows negative supply side effects of exchange rate to dominate. The impact of devaluation on real wages in the short-run is as follows:

$$\frac{d(W/p)}{d\ln e} = h_N\bar{N}\frac{d\ln N}{d\ln e} + (\delta - 1)\frac{d\ln p}{d\ln e} \qquad (28)$$

By making use of the fact that $d\ln N/d\ln e<0$, $d\ln p/d\ln e>0$ and $0\le\delta\le 1$, it can be confirmed that the devaluation decreases real wage rate. The impact of devaluation on balance of payments is as follows:

$$\frac{d\dot{M}}{d\ln e}=\frac{1}{\Delta}\left[a\varepsilon_1\psi\bar{M}+b\varepsilon_1(\delta-1)-\varepsilon_4((\delta-1)+a_2\psi\bar{M})\right] \qquad (29)$$

It is clear that devaluation will improve balance of payments if workers have no money illusion ($d=1$). However, if workers have some degree of money illusion the effect of devaluation upon balance of payments will be ambiguous. In any event an improvement in payments balance (if any) will be achieved at the expense of lower employment, lower real wages, and higher prices.

The results of the long-run analysis can be derived by rewriting the model in the following compact form keeping in view that $\dot{M}=0$ and money supply (M) is an endogenous variable.

$$\begin{pmatrix} a & -a_1 & 0 \\ b & -\psi_1 & -\psi_3 \\ \varepsilon_4 & \varepsilon_2 & 0 \end{pmatrix}\begin{pmatrix} d\ln Y \\ d\ln p \\ dM \end{pmatrix}=\begin{pmatrix} a_2 & 0 & a_3 \\ \psi_2 & -\psi_4 & 0 \\ \varepsilon_1 & -\varepsilon_3 & 0 \end{pmatrix}\begin{pmatrix} d\ln e \\ dt^x \\ dt^m \end{pmatrix} \qquad (30)$$

$$\frac{d\ln Y}{d\ln e}=\frac{\psi_3\varepsilon_1(\delta-1)}{\Delta_{LR}} \qquad (31)$$

where $\Delta_{LR}=\psi_3[a\varepsilon_2+a_1\varepsilon_4]>0$.

Equation (31) shows that devaluation has no impact on long-run production if $\delta=1$. The following equation shows that long-run real wage rate is also invariant with respect to devaluation.

$$\frac{d(W/p)}{d\ln e}=h_N\bar{N}\frac{d\ln N}{d\ln e} \qquad (32)$$

Since in the long-run devaluation is neutral, it also means no change in the level of employment i.e. $d\ln N/d\ln e = 0$. The wage rate is unchanged because the long-run production is unaffected.

IV. Trade Liberalization: Short-run vs Long-run

Developing countries have over the past few decades being pressured to accelerate the pace of trade liberalization. In this section we examine the impact of change in import and export duties on key economic variables in the short-run. The impact of a cut in export and import duties on short-run production is as follows:

$$\frac{d\ln Y}{dt^x} = \frac{-a_1\psi_4}{\Delta} < 0 \qquad (33)$$

$$\frac{d\ln Y}{dt^m} = \frac{a_3\psi_1}{\Delta} < 0 \qquad (34)$$

Equations (33) and (34) indicate that a cut in either the export of the import duty on short-run production is positive. A cut in export duty boosts exports and will cause a rightwards shift in the demand curve which in turn increase in output and prices. On the other hand a cut in import duties makes the imported inputs cheaper and that shifts the aggregate supply towards right which in turn increases output and decrease prices. When import and export duties will be reduced simultaneously then output will sure to increase but prices may increase or decrease depending upon the relative shifts of demand and supply curve. The impact of a cut in export and import duty on real wage rate is as follows:

$$\frac{d(W/p)}{dt^x} = h_Z \frac{d\ln N}{dt^x} + (\delta - 1)\frac{d\ln p}{dt^x} \qquad (35)$$

Given that $d\ln N/dt^x < 0$, equation (35) shows that a cut in export duties decreases real wages if workers have no money illusion (i.e., $\delta = 1$). However, if workers do have some degree of money illusion then real wages may increase or decrease (it can

be confirmed that $d\ln p/dt^x < 0$). By making use of labour supply function (3), the following expression can be derived.

$$\frac{d\ln(W/p)}{dt^m} = h_N \bar{N} \frac{d\ln N}{dt^m} + (\delta - 1)\frac{d\ln p}{dt^m} \qquad (36)$$

Since $d\ln N/dt^m < 0$, $d\ln p/dt^m > 0$ and $0 \le \delta \le 1$ from (36) it is evident that $d\ln(W/p)/dt^m < 0$. In other words, a cut in import duty increases the real wage rate.

The relationship between the size of an export tax and balance of payments is as follows:

$$\frac{d\dot{M}}{dt^x} = \frac{1}{\Delta}\left[a\left(\frac{-\bar{X}\eta_x \psi \bar{M}}{1-t^x} + \left(\eta_x - \frac{1-t^x}{1+t^x} \right)(1-\eta_x) \right) + a_1 \left(-k\psi \bar{Y}\eta_x - \bar{X}^2 \left(1 - \frac{t^x}{1-t^x}\eta_x \right) \right) \right] \qquad (37)$$

Equation (37) shows that the impact of a cut in export tax on balance of payments cannot be unambiguously determined. It is however clear that if export elasticity (η_x) is greater than 1 but less than $(1-t^x)/t^x$ then a cut in import duties improves the balance of payments. This result is no surprise. To produce more output more foreign inputs are required. Thus to improve balance of payments position a country has to control its imports. The condition that $\eta_x < (1-t^x)/t^x$ is not so stringent. For example, if we assume that export duties are 20 percent then what we need is that η_x should take a value less than 4. By making use of equations (24) the following result can be derived.

$$\frac{d\dot{M}}{dt^m} = \frac{a_3(b\varepsilon_2 - \psi_1 \varepsilon_4)}{\Delta} \gtrless 0 \qquad (38)$$

Equation (38) shows that the impact of a cut in import duty on balance payment cannot be unambiguously determined. This occurs due to the fact that a cut in import duties on the one hand increases the use of imported inputs and on the other hand increases exports as price of domestic goods decreases. The net effect on payment balance is ambiguous. Interested reader may note that payments balance will improve if

and only if the slope of $AD = \frac{b}{\psi_1} <$ slope of $\dot{M} = \frac{\varepsilon_4}{\varepsilon_2}$. In reality it is likely that aggregate demand is more sensitive to a price change as compared to the balance of payments and hence chances that the balance of payments will improve are quite high.

The impact of trade liberalization in the long-run is examined in the following. The results are derived by making use of system equations (30). The impact of changes in import duty and tax on exports on production of the final good is as follows:

$$\frac{d\ln Y}{dt^x} = \frac{\psi_3(1+t^m)\gamma_2 F_N \bar{X}\eta_x}{\gamma_1 J(1-t^x)\Delta_{LR}} < 0 \qquad (39)$$

$$\frac{d\ln Y}{dt^m} = \frac{\psi_3[\bar{X}(\eta_x - 1)][F_N\gamma_2/\gamma_1]}{J\Delta_{LR}} < 0 \qquad (40)$$

The above equations suggest that a cut in either tax leads to an increase in the output of the final good. The impact on real wages is as follows where we set $\delta = 1$ in equations (35) and (36) above:

$$\frac{d(W/p)}{dt^x} = h_N \bar{N} \frac{d\ln N}{dt^x} \qquad (41)$$

$$\frac{d(W/p)}{dt^m} = h_N \bar{N} \frac{d\ln N}{dt^m} \qquad (42)$$

As indicated earlier, a cut in either the export or the import duty is expansionary in the long-run which means $d\ln N/dt^i < 0$ for $i = x, m$. This in turn confirms that in both cases real wages continue to increase even in the long-run.

V. Concluding Remarks

By making use of a simple model that is relevant to developing countries, this paper examines the impact of devaluation and trade liberalization on various economic variables. The model is based on the assumption that the country under consideration

follows both fiscal and monetary restraint and government follows a balanced budget policy. The results presented in this paper do not support IMF advice to LDCs to follow currency devaluation as a tool to rectify economic problems. Within the context of this paper, in the short-run, devaluation is stagflationary despite the fact that the country fulfils IMF conditions of balanced budget. This paper highlights the Japanese experience of keeping slightly overvalued currency in the early phases of development. Lifting of import and export duties are shown to be fruitful both in the short-run as well as in the long-run. Furthermore, the paper shows that a cut in import and export duties can boost employment, output and real wages.

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