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TRADE LIBERALIZATION UNDER NEW REALITIES

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The last few decades have witnessed a 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 as suggested by the product cycle theory. 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 is found to be beneficial both in the shortrun and the longrun.

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1. 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.

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[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).

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.

Greenaway, 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, there is no clear evidence that such policies lead to economic growth. They argue that the mixed results can be attributed to misspecification 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 longrun, and on average, trade liberalization is likely to reduce poverty, the situation is not so certain in the shortrun. 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 countries are attempting to increase the share of the manufacturing

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

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 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 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 greater access to the markets of developed countries for their agricultural and manufacturing exports. Last but not least, the accession of China and Taiwan to WTO is likely to influence the trade pattern in the future which appears to be consistent with the product cycle theory.

In order to produce import competing final goods, LDCs are heavily relying on the imports of the relevant intermediate goods. In such a case, blockage of imports in all forms including by means of currency devaluation seems detrimental. It is now widely believed that a number of LDCs may in fact gain from a strong currency. Indeed, China has recently revalued its currency after strong pressure from the US and EU. Revaluation of the Chinese currency is likely to not only help control China's growing trade surplus with the US and EU but also increase the demand for imported goods in China thereby producing a much needed boost to the economies of its major trading partners. A number of studies have challenged 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, a number of studies focused on the adverse supply-side effects of exchange rate movements, for example Lizondo and Montiel (1989) Buffie (1986), Calvo (1983), Hanson (1983), Gylfason and Schmid (1983) and Shea (1976). Moreover, in the case of a number of LDCs, devaluation appears to have failed to fully achieve its objectives. The IMF and other sister agencies attributed this failure to LDCs lack of fiscal as well as monetary discipline. In fact, the lack of a truly independent central bank has acerbated this problem. Generally speaking, LDC governments are engaged in excessive non-development expenditures and in some cases printing too much money.

This paper compares the shortrun and longrun effects of trade liberalization by means of currency devaluation under new realities (i.e., a situation where LDCs are producing import competing goods by utilizing imported intermediate goods). The paper assumes that the country in question adheres to the IMF conditions requiring strict monetary and fiscal restraints. In other words, government relies totally on taxes to finance its expenditure and follows constant money supply rule.

The rest of the paper is organized as follows. A simple macroeconomic model is developed in Section 2. Section 3 contains a discussion of the shortrun and the longrun impact of devaluation on various economic variables. Section 5 contains some concluding remarks.

2. A SIMPLE MODEL

Since the emphasis of this paper is on the effect of devaluation in the presence of 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 $(\overline{K})$ as follows:

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

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 behaved 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]

$$Y = Min\left[\frac{V}{\gamma_1}, \frac{IM}{\gamma_2}\right]. \tag{2}$$

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

$$h(N, p) = w, \tag{3}$$

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 profit as follows:

$$\pi = pY - wN - ep^m(1+t^m)IM, \tag{4}$$

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.

[3] Given the nature of the production of most consumer durables that involving the use of the imported inputs, the assumption of fixed coefficient technology is not so restrictive. In fact, dependence on imported inputs is likely to decrease overtime as the quality of the domestically produced inputs (i.e., *V*) improves (See Ali and Anwar (2005)).

Substituting $Y = \frac{V}{\gamma_1}$, $IM = \frac{\gamma_1 V}{\gamma_2}$ and $V = f(N)$ in Equation (4) above implies

$$\pi = \left[\frac{p - ep^m(1+t^m)\gamma_2}{\gamma_1} \right] f(N) - wN. \tag{5}$$

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

$$\pi_N = \left[\frac{p - ep^m(1+t^m)\gamma_2}{\gamma_1} \right] f_N(.) - w = 0, \tag{6}$$

$$\pi_{NN} = \left[\frac{p - ep^m(1+t^m)\gamma_2}{\gamma_1} \right] f_{NN}(.) < 0. \tag{7}$$

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

$$\left[\frac{p - ep^m(1+t^m)\gamma_2}{\gamma_1} \right] > 0. \tag{8}$$

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

$$\left[\frac{p - ep^m(1+t^m)\gamma_2}{\gamma_1} \right] f(N) = h(N, p). \tag{9}$$

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

$$dN = a_1 \frac{dp}{p} + a_2 \frac{de}{e} + a_3 dt^m, \tag{10}$$

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

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

where $\delta = \frac{\partial h}{\partial p}\frac{p}{h}$ 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 shortrun. However, in the longrun workers are free of money illusion.[4] From Equation (2) above we can write the following aggregate supply function:

$$Y = \frac{IM}{\gamma_2} = \frac{V}{\gamma_1} = \frac{f(N)}{\gamma_1}. \tag{11}$$

Differentiating Equation (11) and substituting the result in Equation (10) leads to the following aggregate supply function where $a = \frac{\gamma_1 Y}{f_N(.)N} > 0$

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

The demand side of the model is based on a fairly simple version of the monetarist approach to balance of payments (see Dornbusch (1973) and Buffie (1986) for an earlier example of this approach). 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.

$$Y = C + X + G, \tag{13}$$

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 $\left(\frac{H}{p}\right)$ as follows:

$$C = Y^d - \left(\frac{H}{p}\right). \tag{14}$$

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

[4] One can assume that $\delta = 1 - e^{-rt}$. For $r > 0, \quad \delta \to 1$ as $t \to \infty$.

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

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

$$\frac{H}{p} = \psi\left[\frac{M^d}{p} - \frac{M}{p}\right]. \tag{16}$$

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

$$\frac{M^d}{p} = kY, \tag{17}$$

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

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

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

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

Government collects revenue through income tax, tY, lump-sum taxes, T, import and export duties, and if necessary prints money $(\dot{M})$ to finance its deficit. Since most LDCs are largely bound by IMF/World Bank and WTO conditionality, we assume that the country in question follows both fiscal and monetary restraints thereby merely relying on tax collections to finance its expenditures. In our model this could be

achieved by dropping $\frac{\dot{M}}{p}$ term from Equation (19) above. This completes the description of the demand side of the model. Using Equations (13) to (19) and making use of $IM = \frac{\gamma_2 f(N)}{\gamma_1}$ leads to a reduced form solution for the aggregate demand function as follows:[5]

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

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

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

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

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

$\tau = \frac{ep^x(1-t^x)}{p}$.

η_x is export elasticity, 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]

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

[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 4 above).

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

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 $IM = \frac{\gamma_1 f(N)}{\gamma_2}$ and $\frac{dN}{N} = \frac{adY}{Y}$ implies that

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

where $\varepsilon_1 = \varepsilon_2 = (\eta_x - 1)X > 0, \quad \varepsilon_3 = \frac{\eta_x X}{1-t^x} > 0, \quad \varepsilon_4 = IM = X > 0$.

This completes the description of the model. Equations (12), (21), and (23) imply that in the impact period (i.e., in the shortrun) there are three endogenous variables: $Y, P,$ and $\dot{M}$. In the longrun $P, Y,$ and M are 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:

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

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 $\Delta = a\psi_1 + ba_1$

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

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 greater than zero.

3. DEVALUATION: SHORTRUN vs. LONGRUN

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

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

$$\frac{d\ln p}{d\ln e} = \frac{a\psi_2 - ba_2}{\Delta}. \tag{27}$$

Because $\Delta > 0,\ 0 \le \delta \le 1,\ \psi_2 > 0,\ a > 0,\ b > 0$ 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 shortrun. It is perhaps worth mentioning that within the context of a standard Mundell/Fleming model, the supply-side effects of exchange rate (in any form) are completely ignored. The intuition behind our result is quite straight forward. Devaluation makes imported inputs expensive which leads to a shift in aggregate supply curve leftwards. Although devaluation gives impetus to exports, an increase in the price of domestic goods, however, decreases the demand for exports and allows negative supply side effect of exchange rate to dominate. The above result can also be shown with the help of following figure.

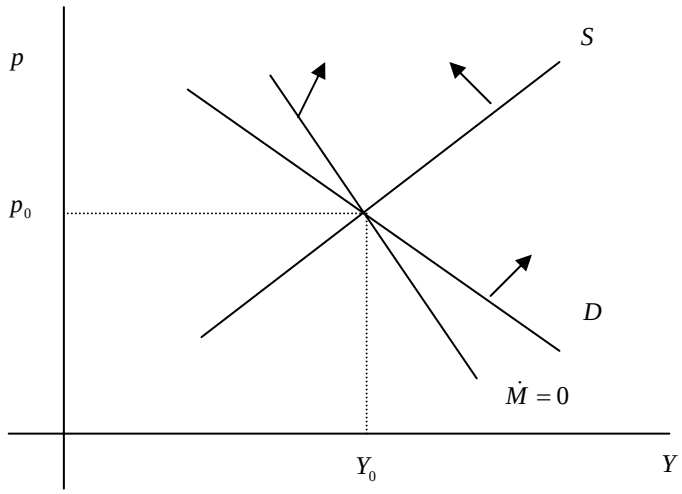

Figure 1. Market Equilibrium

The above figure shows that devaluation tends to shift the supply curve (S) to the left while the demand (D) and balance of payments curves $(\dot{M}=0)$ shift to the right. If the shift in the supply curve is larger than the shift in the demand curve, the negative supply-side effect of devaluation dominates thus causing a decrease in output and an increase in the price level.

The impact of devaluation on real wages in the shortrun is as follows:

$$\frac{d\left(\frac{w}{p}\right)}{d\ln e}=h_N(.)N\frac{d\ln N}{d\ln e}+(\delta-1)\frac{d\ln p}{d\ln e}. \tag{28}$$

By making use of the fact that $\frac{d\ln N}{d\ln e}<0$, $\frac{d\ln p}{d\ln e}>0$ 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:

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

It is clear that devaluation will improve balance of payments if workers have no money illusion $(\delta=1)$. In this case devaluation causes a greater increase in wages which in turn reduces the production and thus the need of imported inputs. 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 the balance of payments (if any) will be achieved at the expense of lower employment, lower real wages, and higher prices. This result stands in sharp contrast to standard Mundell-Fleming model prediction. The Mundell-Fleming model predicts an improvement in balance of payments as long as devaluation is demand expansionary.

Longrun results 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.

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

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

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

Equation (31) shows that devaluation has no impact on longrun production (since $\delta = 1$ in the longrun). The following equation shows that longrun real wage rate is also invariant with respect to devaluation.

$$\frac{d\left(\frac{w}{p}\right)}{d\ln e} = h_N(.)N\frac{d\ln N}{d\ln e}. \tag{32}$$

Since in the longrun devaluation is neutral, it also means no change in the level of employment (i.e., $\frac{d\ln N}{d\ln e} = 0$). The real wage rate is unchanged because the longrun production is unaffected.

4. TRADE LIBERALIZATION: SHORTRUN vs. LONGRUN

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 shortrun. The impact of a cut in export and import duties on shortrun production is as follows:

$$\frac{d\ln Y}{dt^x} = \frac{-a_1\psi_4}{\Delta} < 0, \tag{33}$$

$$\frac{d\ln Y}{dt^m} = \frac{a_3\psi_1}{\Delta} < 0. \tag{34}$$

Equations (33) and (34) indicate that a cut in either export or the import duty on shortrun production is positive. A cut in export duty boosts exports and will cause a rightwards shift in the demand curve which in turn increases 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:

$$\frac{d\left(\frac{w}{p}\right)}{dt^x} = h_Z\frac{d\ln N}{dt^x} + (\delta - 1)\frac{d\ln p}{dt^x}. \tag{35}$$

Given that $\frac{d\ln N}{dt^x} < 0$ and $\frac{d\ln p}{dt^x} < 0,$ 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 or may not increase. By making use of labour supply function (3), the following expression can be derived.

$$\frac{d\ln\left(\frac{w}{p}\right)}{dt^m} = h_N(.)N\frac{d\ln N}{dt^m} + (\delta - 1)\frac{d\ln p}{dt^m}. \tag{36}$$

Since $\frac{d\ln N}{dt^m} < 0,\ d\ln p/dt^m > 0$ and $0 \le \delta \le 1$ from (36) it is clear that $\frac{d\ln(w/p)}{dt^m} < 0.$ 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:

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

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 $\frac{1-t^x}{t^x}$ 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 $\eta_x < \frac{1-t^x}{t^x}$ is not so stringent. For example, if the export duty is 20 percent then η_x must be less than 4. By making use of Equations (24) the following result can be derived.

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

Equation (38) shows that the impact of a cut in import duty on balance payment cannot be unambiguously determined. This follows from the fact that while a cut in the import duty increases the use of imported inputs, it also increases exports as the price of

the domestically produced goods decreases. The net effect on balance of payments is therefore ambiguous. The balance of payments will improve if and only if the slope of the aggregate demand curve $\left(\frac{b}{\psi_1}\right)$ is less than the slope of balance of payments curve $\left(\frac{\varepsilon_4}{\varepsilon_2}\right)$. In reality it is likely that the 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 longrun can be examined by making use of system of equations given by (30) above. The impact of a change in the import duty and tax on exports on production of the final good is as follows:

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

$$\frac{d\ln Y}{dt^m} = \frac{\psi_3[X(\eta_x - 1)]\left[\frac{f_N(.)\gamma_2}{\gamma_1}\right]}{J\Delta_{LR}} < 0. \tag{40}$$

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 wage rate is as follows where we set $\delta = 1$ in Equations (35) and (36) above:

$$\frac{d\left(\frac{w}{p}\right)}{dt^x} = h_N(.)N\frac{d\ln N}{dt^x}, \tag{41}$$

$$\frac{d\left(\frac{w}{p}\right)}{dt^m} = h_N(.)N\frac{d\ln N}{dt^m}. \tag{42}$$

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

5. CONCLUDING REMARKS

The last few decades have witnessed a significant influx of 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 as suggested by the product cycle theory. Within the context of this development, this paper attempts to examine the effectiveness of devaluation and other import restricting polices on various economic variables.

The results presented in this paper are based on a simple model that is relevant to developing countries. The model is based on the assumption that the country under consideration exercises fiscal as well as monetary restraints and the government follows a balanced budget policy as often required by the IMF. IMF has frequently recommended the use of devaluation as means to rectify economic problem faced by a number of LDCs. However, the results presented in this paper do not support the IMF advice involving the use of devaluation. Within the context of this paper where LDCs combine domestically produced goods with imported inputs to produce a final good, devaluation is shown to be stagflationary in the shortrun despite the fact that the country fulfils IMF conditions such as the 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 is shown to be fruitful both in the shortrun as well as in the longrun. Furthermore, the paper shows that a cut in import and export duties can boost employment, output and real wages.

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