Recurrent Expenditure Commitment, External Imbalance, Devaluation and Inflation in the Developing Economies*

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I. Introduction

Government recurrent expenditure financing has been a major problem for developing countries in recent years (Heller, 1975, 1979). The expenditures are required for meeting the domestic and foreign exchange costs of inputs into government production. In addition, these economies have been faced by inflation and external deficit problems. For the most part, governments in these countries may find it impossible to cut spending commitments without provoking social and political unrest.

Generally, policies designed to confront these problems assign less importance to the recurrent expenditure problem. Such policies tend to include devaluation and other "liberalization" measures focussed on the external sector.

However, there is pessimism about the efficacy of currency devaluation for stabilization in the developing economies. On the one hand, developing country officials have been inclined to attribute balance of payments difficulties to "structural" factors, and to claim that exchange rate adjustments increase inflation by generating increases in the prices of imported goods.

On the other hand, both "Keynesian" and "Monetarist" analysis of balance of payments imply the necessity for economic

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contraction in the course of implementing policy for correcting persistent adverse balance of payments. According to some researchers, devaluation will not cure the twin problems of inflation and adverse external imbalance (Rodriguez, 1978). To others, devaluation will achieve these same goals if it is accompanied by "deflationary policy sufficiently severe" to maintain a stable exchange rate (Kaldor, 1983). But in the process, industrial development and urban employment will decline.

In this paper, a framework for analysing the expenditure commitment and inflation-devaluation problem is outlined. It is shown that inflation and adverse balance of payments do not arise only from domestic credit creation, but also from the stagnation of output. Thus, devaluation will not achieve domestic price stability and external balance unless it generates economic expansion rather than contraction.

The premise that devaluation must induce contraction in order to be effective is inconsistent with its use for stabilization. This is because increase of output is required to increase money demand which is as equally important for internal and external stability as the reduction in money supply growth.

Since government spending may not be cut significantly without provoking social and political unrest, a policy for stabilization must confront the recurrent expenditure problem directly. This may be done through measures designed to relieve the government budget of that burden by (a) encouraging private sector participation in the provision of social services, and (b) charging user fees for government services.

The paper also examines the relevance of institutional reform, especially the central bank, for obtaining monetary control. It is shown that such reform, by limiting deficit financing, may promote external and internal balance. However, the instability arising from supply shocks will remain.

II. The Model

The equations of the system are:

(1) $Y_t = f(e,a), \quad f_e > 0, f_a \lesseqgtr 0$

(2) $C_t = X(e,m,Y),\ X_e < 0, X_m > 0, X_y > 0$

(3) $Y_{nt} = g(e,a),\ g_e < 0, g_a > 0$

(4) $C_{nt} = Z(e,m,Y),\ Z_e > 0,\ Z_m > 0,\ Z_Y > 0$

(5) $m_d = h(Y),\ h_y > 0$

(6) $M = ER + D$

(7) $Y = Y_{nt} + eY_t$

(8) $e = (E/P_{nt})$

(9) $a = (P_{nt}/W)$

(10) $m = (M/P_{nt})$

The analytical framework postulates a developing country with rudimentary financial institutions. The economy produces two types of goods: traded goods Y_t and nontraded goods Y_{nt}, with prices P_t and P_{nt}. The price of traded goods is determined by the world price P_w and the nominal exchange rate E. If P_w is assumed to be unity, then Pt = E; e is the real exchange rate, and t and nt stand for traded and nontraded goods respectively.

Transactors in the economy demand traded goods C_t, nontraded goods C_{nt} and real money balances m^d. Nominal money stock M has two components, namely external reserves R and domestic credit D. Recurrent expenditure commitments compel the government to use expansion in D for financing the budget.

The economy uses labour in production. The nominal wage rate is W and the supply price of goods per wage cost is the inverse of the real wage rate a. Equations (1) to (6) describe the system, and equations (7) to (10) are definitions.

It makes no difference to the results to assume that all D, or a significant fraction of it is used to finance the government expenditure commitment to traded goods. Given a fixed exchange rate, *ceteris paribus*, the growth of D will reduce reserves. The amount of external imbalance due to domestic credit creation would be equal to the foreign exchange value of the excess of money supply over money demand.

To examine the interaction between domestic prices and external liquidity, we explore the relation between the real money stock and the real exchange rate using the excess demand (EX) equations obtained from (1) to (6):

$$(11)\quad EX(nt) = Z(e,m,Y) - g(e,a)$$

$$(12)\quad EX(t) = X(e,m,Y) - f(e,a)$$

$$(13)\quad EX(m) = m - h(Y(e,a))$$

Equations (11) to (13) may be differentiated totally and rearranged to obtain the equilibrium curves for each sector in e, m space as shown in (14). Each side of (14) is a 3 by 1 vector. For example $\frac{dm}{de}(nt)$ represent combinations of e and m that yield equilibrium in the nontraded goods sector. Similar interpretations apply to the other sectors.

(14)

$$\begin{bmatrix} \frac{dm}{de}(nt) \\ \frac{dm}{de}(t) \\ \vdots \\ \frac{dm}{de} \end{bmatrix} = \begin{bmatrix} (g_e + g_a \frac{da}{de} - Z_e - Z_Y \frac{dY}{de}) / Z_m \\ (f_e + f_a \frac{da}{de} - X_e - X_Y \frac{dY}{de}) / X_m \\ \\ h_y (Y_e + Y_a \frac{da}{de}) \end{bmatrix}$$

The nontraded sector is cleared through the flexible movement of P_{nt}. A devaluation will raise E and cause e to rise initially. But P_{nt} will also rise as the rise in e shifts consumption from C_t to C_{nt}. The increase in E must cause P_{nt} to rise but less than proportionately, thereby leaving e higher than before the devaluation (i.e., $\frac{da}{de} > 0$ in (14)). Assuming an upward sloping supply response, an increase in Y_{nt} caused by an increase in P_{nt} imply an inverse relation between Y_{nt} and e (ie $g_e < 0$). Similarly, the other supply responses are $g_a > 0$, $f_e > 0$, and $f_a > 0$ (though $f_a < 0$ if $g_a > 0$ is obtained through resource transfers from the traded sector).

Consider the case where the supply responses to devaluation are $g_e<0$, $g_a>0$, $f_e>0$, $f_a>0$ such that there is expansion in total output (i.e., $\frac{dY}{de}$, Y_a, $Y_e>0$). The expansion of output is plausible when the devaluation expected to correct for price distortions, resource misallocation and underemployment, and the relatively low labour intensity of production which are inherent in the maintenance of an overvalued exchange rate (Steel, 1972; Balassa, 1981, 1984).

Given $g_e<0$ and $Z_e>0$ in e, Y_{nt} space, then for a rise in P_{nt} to be consistent with the expansion of output, it is sufficient from (14) that:

$$(15)\ Z_Y \frac{dY}{de} \geqslant g_a \frac{da}{de}$$

Similarly in the traded goods sector, for the devaluation to reduce the external imbalance, it is sufficient that:

$$(16)\ X_Y \frac{dY}{de} \leqslant f_a \frac{da}{de}$$

The left hand sides of (15) and (16) represent the additional expenditures on each sector due to the spill-over effects of income expansion induced by the devaluation; and the right hand sides represent the additional expansion in the output of each sector due to the devaluation. From (14), (15) and (16) we have:

$$(17)\ \frac{dm}{de}(nt)<0$$

$$(18)\ \frac{dm}{de}(t)>0$$

$$(19)\ \frac{dm}{de}>0$$

The equilibrium curves for all the three sectors are brought together in figure 1. HH represents the nontraded goods sector; mm is the money sector, and BB is the external trade sector.

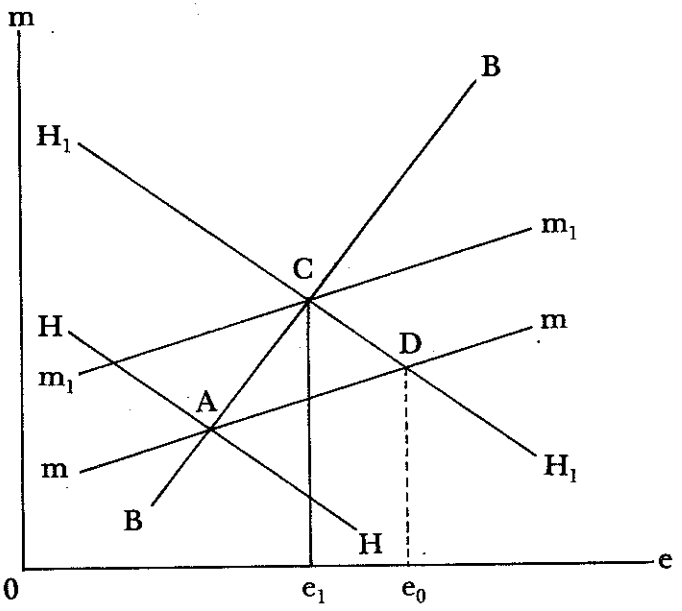
As shown in figure 1, there is equilibrium at A. An expansion of D will require a higher real exchange rate for external

balance. If, for example, e_0 is the real exchange rate required for external balance, then at A there will be reserve losses.

The external imbalance may be removed by adjusting the exchange rate. But the devaluation affects only the nominal exchange rate directly since the real exchange rate is determined endogenously by the movement of the price level. The response of the system to devaluation depends critically on how it affects output.

Consider the case in figure 1 where devaluation is accompanied by output expansion. Output expansion will cause money demand to increase. This will reduce reserve losses and move the money equilibrium curve towards m_1m_1. Output expansion also shifts the nontraded sector equilibrium curve to H_1H_1. Hence all markets are cleared at C where the real exchange rate is e_1.

Figure 1



The effect of devaluation on internal and external stability will be different when total output is insensitive to the devalua-

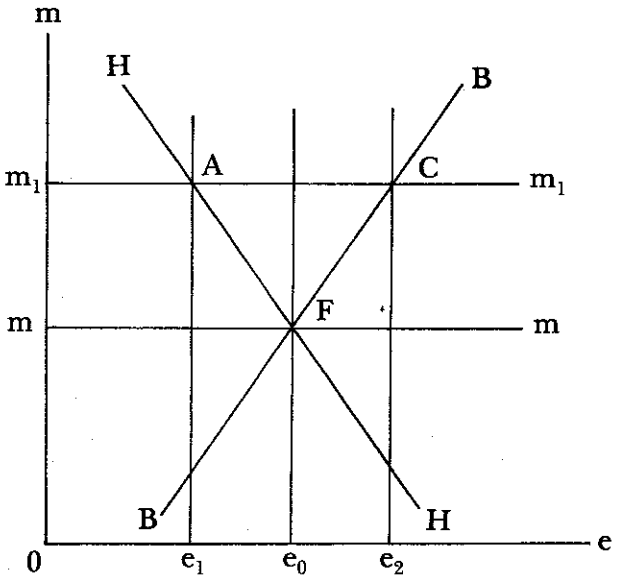
tion ($\frac{dY}{de}, Y_e, Y_a = 0$), or total output contracts with the devaluation ($\frac{dY}{de}, Y_e, Y_a < 0$). Output insensitivity to devaluation is often rationalized by the assumption of full employment. In the other case, though this is not introduced explicitly into the model, output contraction with devaluation is often explained by the rises in the prices of imported inputs required for production. Table 1 describes the shape of each equilibirum curve under these alternative situations. The relevant situation for a country depends on the state of the economy.

From table 1 when output remains insensitive to devaluation, the shape of the equilibrium curves remains the same except for the money sector where $\frac{dm}{de} = 0$ (figure 2). In this case, devaluation must be accompanied by a fixed real money stock in order to have monetary equilibrium.

$$\begin{bmatrix} \frac{dm}{de}(nt) \\ \frac{dm}{de}(t) \\ \frac{dm}{de} \end{bmatrix} = \begin{bmatrix} (g_e - Z_e)/Z_m < 0 \\ (f_e - X_e)/X_m > 0 \\ h_Y(Y_e + Y_a \frac{dY}{de}) = 0 \end{bmatrix} \left(\frac{dY}{de}, Y_e, Y_a = 0\right)$$

$$= \begin{bmatrix} (g_e + g_a \frac{da}{de} - Z_e - Z_Y \frac{dY}{de})/Z_m \lesseqgtr 0 \\ (f_e + f_a \frac{da}{de} - X_e - X_Y \frac{dY}{de})/X_m \lesseqgtr 0 \\ h_Y(Y_e + Y_a \frac{da}{de}) < 0 \end{bmatrix} \left(\frac{dY}{de}, Y_e, Y_a, f_a < 0\right)$$

Figure 2



As shown in figure 2, $\frac{dm}{de} = 0$ for the money sector implies a horizontal mm curve. All sectors are in equilibrium at F. But mm shifts to m_1m_1 because of government expansion of D to finance expenditure commitments. For the real money stock m_1, there is external equilibirum at C, and internal equilibrium at A. The real exchange rate which gives external equilibrium is higher than the rate that gives internal equilibrium.

Since in this case, output is completely insensitive to exchange rate adjustment, the equilibrium curves in figure 2 will remain unaffected by devaluation. Any initial increase in e by devaluation will cause P_{nt} to rise through consumption substitution between Y_t and Y_{nt}. This will lead eventually to a fall in e and, therefore, make another devaluation necessary.

Figure 2 depicts the Rodriguez model (1978) for an economy plagued by alternative problems of external imbalance leading to devaluation, then inflation, and another devaluation. Compared to figure 1, the source of the instability in figure 2 is not merely domestic credit creation, although that is an important factor. An

equally important reason is the lack of response of output to exchange rate adjustment.

The case of devaluation with the contraction of output also poses an instability problem. With the contraction of output as shown in Table 1, $\frac{dm}{de}(nt) \lesseqgtr 0$, $\frac{dm}{de}(t) \lesseqgtr 0$, and $\frac{dm}{de} < 0$. In the case where all three equilibrium curves are downward sloping, for example, any change in e requires an inverse change in m to have equilibrium in any sector. But a decline in m may not be realized given the recurrent expenditure commitment.

The real money stock may be reduced by increases in P_{nt}. But this may not be depended upon to bring about internal and external balance since there is also a decline in money demand induced by the contraction of output. Thus, despite the devaluation, the economy experiences contraction of output with internal and external instability. In effect, devaluation with the contraction of output may give internal and external stability only when the state of the budget makes possible a reduction in the growth of the real money stock.

In the rest of the discussion, algebraic formulations are used to analyse further the importance of growth and also institutional reform for internal and external stability.

Using techniques popularized by Johnson (1973), let T represent time and the change in the variable V over time ($\frac{dV}{dT}$). If B is a change in reserves, then the change in money stock is:

$$(20) \quad \dot{M} = EB + \dot{D}$$

For convenience, the money demand equation (5) can be rewritten as:

$$(21) \quad M^d = P_{nt}\, h(Y)$$

Equilibrium is obtained for the sectors when $M^d = M$, $B = 0$ and the nontraded goods market is cleared. It is required that the real exchange rate which clears the money and nontraded goods sectors be consistent with the real exchange rate at which $B = 0$.

Case 1

Focussing on external equilibrium from (20):

$$(22) \qquad B = \frac{\dot{M}^d}{E} - \frac{\dot{D}}{E}$$

First consider the case of devaluation with expansion of output. In a growing economy, the growth of money demand using (21) is:

$$(23) \qquad \dot{M}^d = \dot{P}_{nt}\, h(Y) + \dot{Y}\, P_{nt}\, h_y$$

Therefore, (22) becomes

$$(24) \qquad B = \dot{P}_{nt}\, h(Y) + \dot{Y}\, P_{nt}\, h_y - \frac{D}{E}$$

With external balance and short-term equilibrium in the non-traded sector, $\dot{P}_{nt} = 0$ and $B = 0$. Therefore:

$$(25) \qquad \dot{D} = \dot{Y}\, P_{nt}\, h_y$$

From (13) and (25) we have:

$$(26) \qquad \frac{\dot{D}}{M} = \frac{\dot{Y}\, p_{nt}\, h_Y}{h(Y)}$$

$$(27) \qquad \frac{\dot{D}}{M} = \frac{k\dot{Y}}{Y}$$

where k is the income elasticity of money demand. Depending on the growth rate and the income elasticity of money demand, the same exchange rate can solve for equilibrium in all sectors. Devaluation may yield external and internal balance if it is accompanied by the growth of output.

Case 2

This case is institutional reform which is often suggested for managing the external sector in developing economies. This view is based on the belief that external imbalance and domestic price instability result from central bank behaviour. Hence, it is argued that the monetary authorities be restricted by institutional arrangements that make it impossible for them to use domestic credit creation for meeting budgetary commitments (Collyns, 1982). Examples of such institutional structures include the West

African Monetary Union and the Rand Monetary Area.

With monetary dependence, credit creation is linked directly to the acquisition of reserves. If n is some constant, then $D = nR$. Therefore:

$$(28) \qquad M = (E + n)R$$

From (28) $\dot{M} = (E + n)B$. When $M = M^d$, and $\dot{M} = \dot{M}^d$, the money sector is in equilibrium. With output fixed, and P_{nt} determined, $\dot{M}^d = 0$. Hence $B = 0$ when $\dot{M}^d = \dot{M} = 0$. External and internal balance are attained even with no growth in output.

However, this case begs the question of financing the recurrent expenditure commitments. Also, with currency dependence, devaluation becomes irrelevant though the currency will fluctuate in relation to the reserve currency. Lastly, the problem of internal instability arising from supply shocks such as economic contraction will still remain.

III. Conclusion

This analysis has implications for the role and effectiveness of stabilization policies based on devaluation for developing countries having serious balance of payments and inflation problems. The analysis suggests that external imbalance and inflationary pressure may be due not solely to domestic credit creation but also to the contraction or lack of growth of output.

It is contradictory to hold the view that exchange rate adjustment does not raise output and argue at the same time that devaluation be used to achieve external and internal stability. Given government expenditure commitments devaluation is not useful for attaining external balance and domestic price stability unless it is accompanied by economic expansion rather than contraction.

In the course of stabilizing the economy it is important that money supply growth be curtailed. It is also desirable that money demand growth be increased. It is because of inducing the growth in money demand that the growth of output is important.

The relevance of devaluation depends on whether or not, by

mixing with the other elements of a stabilization package, it corrects for the price distortions implicit in the maintenance of an over-valued exchange rate, and promotes efficient resource use and economic expansion.

Rather than depending solely on devaluation, direct budgetary measures may be considered especially where recurrent expenditure commitments compel the government to depend on credit creation. Some of these measures may include (a) introduction or extension of user fees on social services, (b) improvement of tax administration machinery, and (c) encouragement of the private sector production of social services (health, education, housing, etc.) which make demand on the government budget.

User fees are particularly useful because they (a) augment government income and make possible an increase in the coverage and quality of social services, (b) may discourage the tendency to overconsume government service, and (c) enhance the effects of anti-inflationary policies by reducing government dependence on domestic credit creation for financing the budget.

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