The Impact of Devaluation on the Balance of Payments of the Less Developed Countries:
A Monetary Approach

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I. Introduction

Currency devaluation is a highly controversial issue in many countries. Such controversies stem from both theoretical and empirical research that have imbued its rich body of literature.

The theoretical work in this area is enriched with the "Elasticity Approach" initiated by Bikerdike, the "Absorption Approach" launched by Alexander, the "Monetary Approach" developed by Hahn, Johnson, Mundell, and recently by the writings of Dornbush, Anderson and Takayama, and Gylfason and Schmid among many others.

The empirical studies in this area include:

1. the work by Jonson and Kierskowski on developed countries,
2. Genberg, and Connolly and Taylor (1979) on a mixed sample of developed and developing countries, and
3. Cooper, and Connolly and Taylor (1976) on developing countries.

The existence of such diverse theoretical and empirical work on the subject of devaluation has resulted in skepticism among many less developed countries (LDCs), regarding the usefulness of such a device. Unconvinced by economic arguments policy makers

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where q stands for the real value of permanent income, p_d domestic prices, and λ a constant that shows the fraction of yearly income that people desire to hold in the form of cash balances.

The purchasing power parity:

$$(2)\ P_d = EP_w$$

where P_w is world price and E is exchange.

The money supply:

$$(3)\ M_s = I + C$$

where M_s stands for money, defined as currency plus demand deposit, I international reserve, held by both central and private banks, and C domestic credit, defined as the net holdings of assets by both central and private banks.

Monetary Equilibrium:

$$(4)\ M_s = M_d$$

Permanent income valued at world prices:

$$(5)\ Q = P_w q$$

where Q is the nominal value of permanent income.

Substituting equations (2) and (4) into equation (1), we get:

$$(6)\ M_s = \lambda E P_w q$$

Substituting equation (6) into equation (3) we get:

$$(7)\ I + C = \lambda E P_w q$$

Substituting equation (5) into equation (7) we get:

$$I + C = \lambda E Q$$

$$(9)\quad \frac{P^t}{M_s^t} = (1+\delta)\ (\frac{\Delta E^t}{E^t}) - (\frac{\Delta C^t}{M_s^t} - \frac{\Delta C^{t-1}}{M_s^{t-1}})$$

The above equation, which expresses the improvement in the balance of payments as a function of money stock and exchange rate, provides the analytical framework for the regression analysis that is presented in this study.

III. The Data

The data consist of 21 independent devaluation episodes that took place in LDCs during 1959-1979 period. In compiling this data it was decided to include only those devaluations that occurred in small, open LDCs, ruling out cases such as Chili and Uruguay that have been experiencing devaluation almost continously over a long period time. To form such data, Cooper's study which provides a sample of 24 devaluations during 1959-1966 was consulted. This sample is basically the same as the one that was used by Connolly and Taylor in their study. However, for the purpose of this study it was decided to drop advanced countries such as Canada and Israel from observation, including only 11 LDCs in the data pool. Additionally, to expand observations, the data was updated to include those devaluations that took place until 1979. Availability of data clearly influenced the selection process. The countries and their dates of devaluations are given in Table 1.

Given the dates of devaluations the next task was to collect the data for the different variables that are used in the regression analysis. To achieve this task different issues of International Financial Statistics were consulted. This publication provides quarterly data for different countries in different years. To calculate the value of the balance of payments in each period, the value of the net holding of international reserve (I) by the consolidated banking system was derived. The change in I during the four quarters after the devaluation was used as a measure of the balance of payments in the years after devaluation. Similarly the change in I during the four quarters before devaluation was used as the measure of the balance of payments in the year preceding where α and β are the coefficients associated with the rate of growth of devaluation and the rate of expansion of domestic credit, respectively. ε is an error term.

Table 2 shows the estimation results, where equations A and B show the one year and two year results, respectively. If one assumes that full adjustment in money stock and prices is implemented in one year, equation A will apply. However, if the adjustment is slower, equation B would be applicable.

An interesting result detected by both equations in table 2 is that for both equations (A and B) the absolute value of the β coefficient is greater than 1 (-1.07044 and -2.75347). Additionally as the value of t statistics for both regression indicates one could reject the null hypothesis that changes in domestic credit has no effect on the balance of payments.

The value of the α coefficient for the equation A, reported in table 2, is 0.83582. A simple t test for the hypothesis that this coefficient is equal to one is 1.06773, so one can not reject the hypothesis. The value of the same coefficient for the quation B is 2.02818, which is greater than one. As the value of the t statistics for both of these coefficients show one could reject the hypothesis that devaluation has no impact on improving the balance of payments.

Table 2

$$\frac{P^t}{M_s^t} = \alpha \left(\frac{\Delta E^t}{E^t}\right) + \beta \left(\frac{\Delta C^t}{M_s^t} - \frac{\Delta C^{t-1}}{M_s^{t-1}}\right) + \varepsilon$$

Equation	α	β	R^2	F
A	0.83582*	-1.07044*	0.47338	8.09014*
	(0.15427)	(0.0081)		
B	2.02618*	-2.75347*	0.71099	22.14049*
	(0.01692)	(2.02818)		

* Significant at five percent level

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