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KOBE UNIVERSITY

EXTERNAL DEBT, REAL EXCHANGE RATE AND BUDGET DEFICIT IN LATIN AMERICAN COUNTRIES

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"Growth without stability may be technically impossible over the longer run. Stability without growth may be politically impossible except in the short run."
by Vito Tanzi(1987),p.123.

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I. INTRODUCTION

Developing countries have resorted to external borrowing to cover their internal and external imbalances. Using a conceptual framework which highlights the role of the real exchange rate and the government budget deficit, this paper investigates the mechanism of the external debt and its dynamics.

The paper is organized in three parts. It starts with a policy assignment model which describes external and internal balances. In this model a debt mechanism is shown as a result of the real appreciation of the exchange rate and/or a continued budget deficit. Implications for IMF type adjustment programs are also considered. In the following section we analyze a debt dynamics model in which two policy rules are introduced to reduce the external debt. Special attention is paid to the linkage between the budget deficit and investment. The paper concludes with a discussion of how debt relief can help in attaining favorable debt dynamics.

II. DEBT MECHANISM

(1) Basic Model

In this section we set a basic model based on the policy assignment of describing macro imbalances in developing

countries.[1] The model is a simple one which has two policy objectives (internal and external balances) and two policy instruments (the real exchange rate and the budget deficit). There are two goods which are assumed to be imperfect substitutes: home produced goods and foreign goods. Home goods are assumed to be tradable. Let p_h, p_f and r be the prices of home goods in the domestic currency, foreign goods in the dollar, and the nominal exchange rate. The real exchange rate (e) is defined as

$$e=(r*p_f)/p_h,$$

where the price of foreign goods is supposed to be given. It is assumed that changes in the budget deficit affect the demand for both goods through real spending. Real exchange rate changes affect the demand for both goods through substitution effects. Although changes in the real exchange rate also affect the real value of spending, we assume that substitution effects dominate the income effect.

At the full-employment level of output an increase in the real exchange rate (depreciation) raises the real spending on home goods and thus requires the compensating decline in budget deficit to reduce spending. The negatively sloped schedule I in Figure 1, thus, represents the internal balance at the full employment level. The area below the schedule corresponds to a recession or unemployment, and the area above to a situation of excess-demand or boom. Along the schedule F the current account is in balance. A real depreciation brings about a trade surplus and hence requires higher spending through an increase in the budget deficit to restore the external balance. Thus the schedule is positively sloped. The area above the schedule corresponds to a surplus and the area below to a

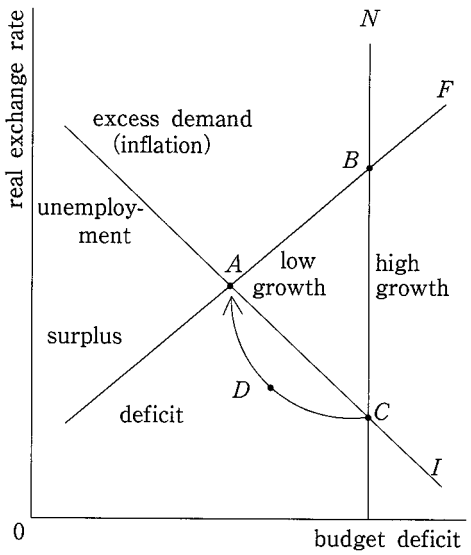


Figure 1

1 The idea of the analysis comes from Corden (1986) and Dornbusch (1982), (1987).

deficit. In an economy that has the same number of policy objectives as it has instruments, the internal and external balances can be attained at the point A from policy assignment rules.

In Latin American countries, however, there is not likely to be such an equilibrium. These countries suffer serious poverty and structural unemployment problems owing to the growing labor supply. This necessitates a high economic growth rates and future employment creation to maintain social and political stability. There will be a given level of investment to attain this required growth rate and employment creation. Since, in Latin America, a major part of investment is carried out by the public sector and government enterprises, there must be a corresponding level of fiscal expenditure or budget deficit in order to attain this level of investment. By assuming, for a simplification of the model, that the investment depends mainly on this budget deficit and is not influenced by the real exchange rate, we get a vertical line N that represents the level of budget deficit that gives the target growth rate. The area to the left of the line N thus correspond to a lower growth rate and the area to the right to a higher growth rate than the target.[2]

In the case where the authority assigns first the budget deficit to the desired growth rate, the only remaining policy choice is moving the economy along line N. The policy assignment problem, then, is that the number of policy objectives and instruments is now inconsistent, because a growth rate objective has been added. At point B, the economy faces an inflation, and at point C a current account deficit. The economy thus cannot attain three policy objectives at the same time.

The model is relevant in explaining the debt process in developing countries, particularly in Latin America. When foreign borrowing is limited, the economy cannot fully finance the current account deficit, and will have to choose points near point B. If domestic production does not grow sufficiently and excess-demand continues, a chronic high inflation will appear. This situation corresponds to the period before the dramatic development of the international financial market (the period before 1973) and to the period after the debt

2 Actually the budget deficit also depends on payroll and interest payment for domestic and external debt. But here we assume the government investment to be dominant for the budget deficit just as in the period of the second half of the 1970s in Brazil.

crisis with its limited international money supply and credit rationing (after 1982). By contrast, when foreign borrowing is available and unlimited (the period 1973-82), a country can finance its current account deficit and maintain a high growth rate with no inflation, as point C. This means that developing countries can manage their economies at point C without the intolerable social costs of unemployment, inflation and low growth rates, as long as they can borrow abroad without special costs. In this sense it seems to be rational, from the social and political points of view, that the Latin American countries have built up a large external debt.

(2) Debt Accumulation

Needless to say it is impossible to remain at point C in the long run. Sooner or later the country is forced to balance the current account in order to pay the debt service. Some type of adjustment is required to restore the current account balance. But measures which depend on the policy assignment rule are not relevant to having current account balance. Since the budget deficit is assigned, with priority given to the target growth rate, only the real exchange rate is available as a policy instrument. A real depreciation, though, brings inflation. The economy is thus in a dilemma between inflation and the current account deficit. This in turn suggests the importance of the structural adjustments financed by external borrowing that are intended to expand supply capacities and improve productivity in the export sectors.

An expansion of the supply could be shown as a shift of schedule I to the right. Because schedule I is derived at a given level of supply, a rise in supply requires an increase in the budget deficit at a constant real exchange rate to keep the internal balance. If the shift is enough to reach point B, the current account deficit will disappear. On the other hand, an improvement of export sectors could be shown as a shift of schedule F to the right. At a constant real exchange rate, an increase in the export competitiveness must be balanced by the rise in imports that is induced by a budget deficit expansion. If schedule F shifts up to point C, the current account will be balanced. When the current account is balanced, interest payments plus other service payments equal the trade surplus. Hence, it can be said that this dynamic process

through structural adjustments is indispensable in enabling debt payments.

The reality in debtor countries, however, did not follow this process. There are three major reasons for this. The first is capital flight. When borrowed money returns abroad in legal or illegal ways to deposits in foreign banks, or to buy overseas immobile assets, this debt cannot contribute to the expansion of production capacity. Latin America is known as a well dollarized economy. Dollars move sensitively across the borders depending on portfolio behavior. Thus, when people anticipate political instabilities, changes in domestic interest rates and exchange rate devaluations, immediate capital flight occurs.

The second is the fact that the investments supported by external debt had very limited effects on supply capacities and export competitiveness. Even if the external debt was used for investment, and not consumption, there were efficiency and missallocation problems. Brazil is a typical case. Although it cannot be denied that some part of the debt has financed the capital flight from Brazil, a major part of the debt was actually invested as real capital in numerous gigantic national projects: *Itaipú* (hydroelectric power station), *Angra dos Reis* (nuclear power station), *Carajás* (mining development), *Proálcool* (alcohol as a substitute for oil), ironworks and railway constructions, etc. However, investments in sectors such as infrastructure, energy and basic industry are likely to have a long maturity period. This means that investment takes a long time before it starts production and have any direct or indirect interindustrial effects on export sectors. Furthermore, the fact that investment was biased to these sectors implies serious crowding-out effects on private investment, particularly in industries where Brazil enjoyed a comparative advantage (manufacturing and agriculture). Thus, in the case of Brazil, we have to pay attention to the fact that the external debt did not always have an immediate linkage to supply expansion or to productivity improvements in the export sectors.[3]

Finally we should mention the changes in the international environment which happened before the accomplishments of the above projects. As more than 70% of Latin American debts are contracted at a free floating

3 An exception would be the success of soybean export.

interest rate, the increase in real interest rates (including fees and spreads) in the late 1970s brought a large increase in interest service. The Libor increased sharply from 7% in the middle of 1970s to around 16% at 1981. In addition to this, the collapse of the world economy deteriorated the real prices of primary goods and reduced demand for manufactured exports from debtor countries. According to the estimate by Cline(1984), the effects of these shocks had amounted to US$141 billion for non-oil-exporting developing countries between 1981 and 82, which is almost equal to the actual increments of the external debt of these countries during the same period.[4]

Figure 1 shows the effects of these external shocks as a shift upward and to the left of the schedule F, because a current account deficit induced by these shocks requires a compensating real exchange depreciation or a budget deficit cut in order to balance the current account. Here it should be noted that these shocks not only worsened the debt burden but also prevented the dynamic process which forms abilities to pay. Since these shocks happened at a stage where the ability to pay had not yet developed fully, as in the case of Brazil, a large amount of new money was needed to serve interest payments. As this type of debt does not contribute to the ability to pay, it leads to a greater accumulation of debt and debt burdens. This process is shown as a further shift of schedule F to the left. Under such a situation, we can no longer expect to have a favorable dynamic process of debt.

(3) IMF Type Adjustment Programs

Since the debt crisis in Mexico at 1982, the debt managing system supported by the IMF has been established. The point we focus on is that the system requires severe domestic economic adjustments in the debtor country. Since the adjustment programs of the IMF are based on orthodox Monetarist policy, the principal measures have generally been budget deficit cuts and real exchange devaluations. In Figure 1 the IMF adjustment is shown as an adjustment from point C to point A where there is no inflation and no current account deficit. Since point A is on the schedule of external balance, the country can pay interest service equal to its trade surplus.

4 W. Cline (1984), P.13.

Point A, however, lies in the area of a lower growth rate than the target rate represented by schedule N. This means that IMF adjustment programs require debtor countries to abandon their target growth rate and forces them to pay debt service at the costs of low growth. This type of adjustment often aggravates social and political instabilities because it raises a deep recession and a future increase in the structural unemployment. This is particularly serious in the case of a debtor who has severe poverty and unequal distribution problems. Furthermore, since most of the Latin American countries have only recently changed from military to democratic regimes, the political system is generally unstable. In such a transition, political coalition between groups is generally weak and a debt policy which forces the public to pay debt service at their costs would face strong resistances.

In fact, after four years of austerity, the Brazilian government finally decided in 1986 to abolish the IMF supported adjustment program for fear of losing domestic political support. It is interesting to note the Brazilian short-run adjustment process in the period from 1982 to 85. In this period, the ratio of the budget deficit (operational) to GDP declined dramatically from 6.6% in 1982 to 2.7% in 1984 and 4.3% in 1985. However, because of the slow adjustment speed of the real exchange rate, the budget deficit cut did not necessarily shift the economy from point C to A along schedule I. A probable adjustment path is expressed by CDA. The economy moved from point C to A passing through the area well below schedule I with both recession and unemployment. It is generally difficult to depreciate the nominal exchange rate drastically when imported inflation is expected and capital flight is stimulated by expected depreciations. In this case the real depreciation was possible only by a decline in domestic prices reduced by a cut in real wage.

More real wage cuts, however, were difficult. Since the budget deficit was reduced not only by giving up investments but also by cutting subsidies and social expenditures, the real standard of living, has worsened dramatically. Furthermore, as wage indexation rules have become widely established, the real wage adjustments have become slower. The slower the real wage adjustments are, the more lasting the recession and unemployment, and the

larger the adjustment costs. The adjustment program, thus, becomes unsustainable for debtor countries.[5] By contrast, the prescription of the IMF, based on the Monetarist theory, assumes a speedy adjustment process.

Another essential issue of the IMF programs is that the dynamic process which enables debt payments through improvement in supply and international competitiveness are to be prevented because investment is stifled by cutting public expenditures and the budget deficit. The fact that a major part of the investment in Latin American countries has been done in the public sectors can not be ignored. Another point is that when debtor countries face the protectionism of developed countries, it is difficult to expand exports by real exchange rate depreciation. Debtor countries are then forced to adapt wide and high import restrictions. Drastic import reductions will hinder investment and economic activities. In either case, the problem is that the resources freed by the adjustment programs have not been transferred to investment, but have been forced to be transferred to the trade surplus and to debt payment. The desired dynamic shifts of schedules I and F can no longer be expected.

In sum, the fundamental origins and the accumulation mechanisms of the external debt in developing countries, particularly Latin America, are to be

5 The adjustment process after the revolt from the IMF is different. The budget deficit resurged by the interest payment burden of external and internal debt adding to an increase of social expenditure. By contrast the current account was almost balanced in spite of the appreciated real exchange rate. These changes made the economy move along the different path from A passing the area above the schedule I with a shift of the schedule F to the right (Figure N-1). The shift of the schedule F could be explained by the strict import controls and the dynamic export activities of the private sector such as soybean exports. Needless to say, today's high inflation should be explained not by excess-demand but by the money supply directly related to the budget deficit. To analyze the high inflation in this framework, the monetary sector must also be a analyzed. See Dornbusch (1982).

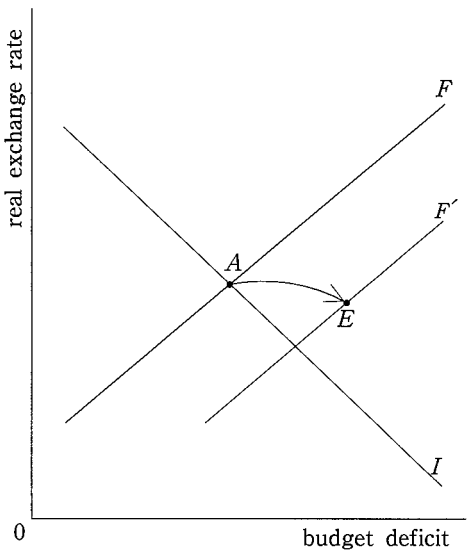


Figure N—1

blamed for the budget deficit and the real exchange appreciation that are brought about by the poverty problems and the growing labor forces. It is no doubtful that a solution to the debt problem is to diminish the budget deficit and equilibrate the real exchange rate from the theoretical point of view, as recommended by the IMF. However, adjustments without growth may be politically unsustainable in the long run. As far as we assume that the investment in developing countries strongly depends on public sectors and the budget deficit, the IMF type adjustment programs are not likely to guarantee the desired high growth rate and, therefore, may lead sooner or later to the abandonment of the programs. We now turn to an argument of the dynamic aspects of the IMF type adjustments.

Ⅲ. DYNAMICS OF ADJUSTMENT POLICIES

(1) Model

The analysis of the last section showed how budget deficit and real exchange rate policies bring about external debt. It is necessary to change these two policies to resolve the debt problem. This section provides a model which shows the dynamic effects of policy changes. In the model we draw particular attention to the linkage between the budget deficit and investment. This linkage plays a crucial role in determining the main features of the dynamics. The budget deficit and the real exchange rate are assumed to be adjusted, by policy rules, according to changes in debt stock. In the model, we assume that the economy always maintains the internal balance because the authority gives priority to avoiding unemployment and inflation[6] in order to keep social and political stability. Here, the adjustment speeds of the budget deficit and real exchange rates are assumed to be fast enough to restore internal balance. For simplification, the model does not include the dynamic aspects of the export sector which is expected to occur via arise in productivity and other improvements in competitiveness.

Corresponding to the basic model of the last section, the model takes the following form. There are two goods (home and foreign goods) which are imperfect substitutes. The country produces home goods which are exportable. The price of foreign goods is given by the world market.

The production function of home

6 The inflation referred here is the excess-demand inflation that is mild not hyper. See footnote 5.

goods is given as

$$Y=F(K, N).$$

where Y, K, N denotes output, capital and labor respectively. From the assumption of the constant returns to scale, the per capita output is written as

(1) $y=f(k), \quad f_k>0, \ f_{kk}<0.$

where, $y=Y/N,$

$k=K/N.$

A X_x means a partial derivative. The labor growth rate is assumed to be constant.

(2) $\dot{N}/N=n.$

where " $\cdot$ " indicates an increase with respect to time.

The demand for home goods per capita is assumed to be a function of the real exchange rate e (measured as the ratio of the price of foreign goods to the price of home goods in domestic currency) and the budget deficit per capita b.

(3) $y=h(e, b), \quad h_e>0, \ h_b>0.$

Then, the equilibrium condition in home goods market is given as

(4) $f(k)=h(e, b).$

It is assumed that the trade deficit measured per capita is also a function of the real exchange rate and the budget deficit.

(5) $B=g(e, b), \quad g_e<0, \quad g_b>0.$

Since the trade balance B is defined in terms of the deficit, the sign of g_e is negative. B is supposed here to be always positive. We assume that the growth rate of capital stock K depends only on the level of the budget deficit taking account of the fact that a large amount of investment is realized by the public sector and financed by the budget deficit in developing countries.

(6) $\dot{K}/K=\Phi(b), \quad \Phi_b>0.$

From the equations (2),(6) and the definition of the capital/labor ratio, we get the dynamic equation of k,

(7) $\dot{k}=\Phi(b)k-nk.$

We define the external debt in terms of the price for foreign goods,

(8) $D=NB/e+rD.$

where D is the external debt stock and r the nominal interest rate on debt. Using the external debt per capita

$$d=D/N$$

the dynamic equation of the external debt is given as

(9) $\dot{d}=g(e, b)/e+(r-n)d.$

Therefore, the dynamics of the model are expressed as equations (7) and (9).

Since at the steady state equation (7) gives

$$\Phi(b)=n,$$

we obtain a linear approximation system by taking a Taylor expansion of equations (7) and (9) around an equilibrium value, and then disregarding the second and higher order terms.

$$(10)\quad \begin{bmatrix} \dot{k} \\ \dot{d} \end{bmatrix} = \begin{bmatrix} 0 & 0 & k-\bar{k} \\ 0 & r-n & d-\bar{d} \end{bmatrix} + \begin{bmatrix} k\Phi_b & 0 & b-\bar{b} \\ g_b/e & g_e/e-g(e,\ b)/e^2 & e-\bar{e} \end{bmatrix}$$

where $\bar{x}$ indicates a steady state value.

(2) Policy Rules to Adjust the Real Exchange Rate

Now the budget deficit and the real exchange rate need to be determined to complete the model. Here we introduce a policy rule by which the real exchange rate is adjusted according to changes in debt stock. When the debt stock is larger than its steady state level, the real exchange rate is to be depreciated. The rule is given as

$$(11)\quad e-\bar{e}=\delta(d-\bar{d}).$$

On the other hand, since internal balance is always maintained by an assumption, the budget deficit is given by equation (4) near the equilibrium point.

$$(12)\quad b-\bar{b}=(f_k(k-\bar{k})-h_e(e-\bar{e}))/h_b.$$

In other words, the budget deficit is determined by the internal balance constraint at a given capital stock k and a given real exchange rate e which is determined by the policy rule.

Hence, the dynamic system is rewritten as,

$$(13)\quad \begin{bmatrix} \dot{k} \\ \dot{d} \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix} \begin{bmatrix} k-\bar{k} \\ d-\bar{d} \end{bmatrix},$$

where,

$$a_{11}=k\Phi_b f_k/h_b>0$$
$$a_{12}=-\delta k\Phi_b h_e/h_b<0$$
$$a_{21}=g_b f_k/eh_b>0$$
$$a_{22}=r-n-\delta\{g_b h_e/eh_b-g_e/e+g(e,\ b)/e^2\}<0.$$

An examination can be made of the implications and the signs of each coefficient from a_{11} to a_{22}. a_{11} shows the effect of a rise in k on its change $\dot{k}$. A rise in k increases the budget deficit from the internal balance constraint at a given real exchange rate. This increase in the budget deficit affects investment and brings a change in k. The partial derivative Φ_b is assumed to be positive and, thus, the sign of a_{11} is positive.

a_{12} is the effect of changes in debt stock d on $\dot{k}$. When d increases, e will depreciate according to an rule. From the internal balance constraint a depreciation brings a reduction in the budget deficit, which leads to a decline in k. The sign of the coefficient is negative depending on Φ_b.

a_{21} indicates the effect of an increase in k on changes in $\dot{d}$ (new borrowing). An increase in k brings a rise in the budget deficit by the internal balance

constraint. This rise in the budget deficit induces a deterioration in the trade deficit which must be financed by new debt. The sign of a_{12} is positive.

a_{22} shows the effect of an increase in d on its change $\dot{d}$. The effect is divided into two parts: (1) A rise in d increases the interest payments which bring the need for new debt. (2) At the same time a rise in d induces a real depreciation by the rule that will reduce the trade deficit and new debt. When the real depreciation is sufficient for the latter effect to become dominant, the value of δ becomes large enough to assure the sigh of a_{22} negative.

Now we can examine the local stability of the system. The trace and determinant of the coefficient matrix are as follows:

$$\text{Trace}=k\Phi_b f_k/h_b+r-n$$
$$-\delta\{g_b h_e/eh_b-g_e/e+g(e,\ b)/e^2\}<0.$$
$$\text{Determinant}=(k\Phi_b f_k/h_b)$$
$$+\{r-n-\delta(-g_e/e+g(e,\ b)/e^2\}<0.$$

Then the condition for saddle point stability is held.

Figure 2 shows a phase diagram. When the economy starts out from the initial point A, since d is located below the line $\dot{d}=0$ (which means $d-\bar{d}<0$), the real exchange rate appreciates and the trade deficit increases. Next, the external debt will accumulate. At the initial point A, since k locates to the right of the line $\dot{k}=0$ (which means $k-\bar{k}>0$), k will rise through the induced increase in the budget deficit. At the same time, the depreciation will induce an increase in budget deficit by the constraint of the internal balance. This brings a further rise in k. From the initial point A, thus, both the external debt d and the capital/labor ratio k are rising continuously.

In the case of the initial point B, since d is above the line $\dot{d}=0$, the real exchange rate depreciates and the debt declines. This depreciation leads to a decrease in the budget deficit as well as in k. At the same time, at point B, since k is below the line $\dot{k}=0$, k is declining.

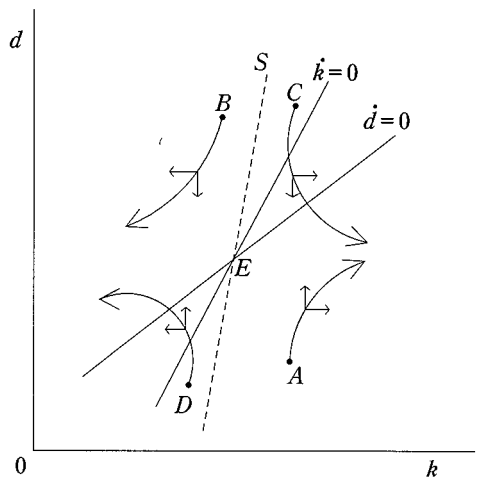


Figure 2

Thus, from point B, both debt and capital/labor ratio have to decrease continuously. From point C and D, after passing the line $d=0$, the economy will trace either of the unstable paths.

It is clear from the analysis that, under a system where only the real exchange rate is to be adjusted according to debt, the economy has two choices: to have both debt and capital expand, or to have both diminish continuously, unless the economy stays on the saddle path (the dotted line S). Now let us suppose that point B represents the present Latin American situation with a heavy debt burden and a low capital/labor ratio. What will happen if the economy depreciates the real exchange rate without a budget deficit rule? The analysis shows that the economy has to diminish in a continuous way although the program can reduce the external deficit. This implies the possibility that political instabilities could increase along with contractions of the economy and that this type of adjustment program would be, sooner or later, abandoned. Of course, it is possible that the economy can assure economic growth by some kind of debt relief which can reduce the initial debt stock to the area below the saddle path where the economy expands continuously. Even in this case, though, the external debt will continue to accumulate despite the real depreciation. When the debt level reaches a certain level, credit rationing would become serious. Thus, it can be said that the adjustment program would inevitably be unsuccessful in the long run if the debtor county mainly depended on the real exchange rate policy.

(3) Policy Rule to Adjust the Budget Deficit

We now turn to a policy rule which adjusts the budget deficit according to changes in external debt stock. The rule is described as

(14) $b-\bar{b}=-\delta(d-\bar{d}).\quad \delta>0.$

On the other hand, the real exchange rate is determined by this budget deficit through the internal balance constraint.

(15) $e-\bar{e}=(f_k(k-\bar{k})-h_b(b-\bar{b}))/h_e.$

Substituting equations (14), (15) into (10), we get another dynamic system.

(16) $$\begin{bmatrix}\dot{k}\\ \dot{d}\end{bmatrix}=\begin{bmatrix}a_{11} & a_{12}\\ a_{21} & a_{22}\end{bmatrix}\begin{bmatrix}k-\bar{k}\\ d-\bar{d}\end{bmatrix},$$

where,

$a_{11}=0$

$a_{12}=-\delta k\Phi_b<0$

$a_{21}=(g_e/e-g(e,\ b)/e^2)f_k/h_e<0$

$a_{22}=r-n-\delta\{g_b/e$

$-(g_e/e-g(e,\ b)/e^2)h_b/h_e\}<0,$

It is worthwhile looking at the signs and the implications of the coefficients from a_{11} to a_{22}. a_{11} is the effect of k on $\dot{k}$. Since the policy rule determines b exclusively depending on changes in external debt, a change in k does not affect b and hence $a_{11}=0$. Changes in debt, however, affects b by the rule, leading to changes in k. Thus, the sign of a_{12} is negative because the sign of Φ_b is assumed to be positive.

a_{21} indicates the effect of changes in k on $\dot{d}$ (new borrowing). As a rise in k requires a real depreciation to restore the internal balance, the trade deficit improves and the debt decreases. Thus a_{21} is negative. a_{22} is the effect of d on $\dot{d}$. There are two opposite effects. First, the higher d needs the larger $\dot{d}$ through an increase in interest payments. Second, since the higher $\dot{d}$ induces the larger depreciation by the policy rule, a smaller $\dot{d}$ is needed. We assume that the responses of the policy rule (δ) are large enough to make the sign of a_{22} negative.

The local stability of the system is examined by

$$\text{Trace}=r-n-\delta\{g_b/e-(g_e/e-g(e,\ b)/e^2)h_b/h_e\}<0.$$

$$\text{Determinant}=\delta k\Phi_b(g_e/e-g(e,\ b)/e^2)f_k/h_e<0.$$

Thus, the system shows a saddle point stability the same as in the case of the real exchange rate rule. Figure 3 shows a phase diagram of the budget deficit rule.

When the economy starts from the area to the left of the saddle path, the most unfavorable scenario appears, a scenario in which the economy contracts and the debt accumulates in a continuous way. On the other hand, when it starts from the area to the right of the saddle path, the most favorable case in which the economy continues to expand and the debt continues to diminish comes about. When $k-\bar{k}>0$, the real exchange rate has to depreciate from the internal balance constraint, but k dose not change.

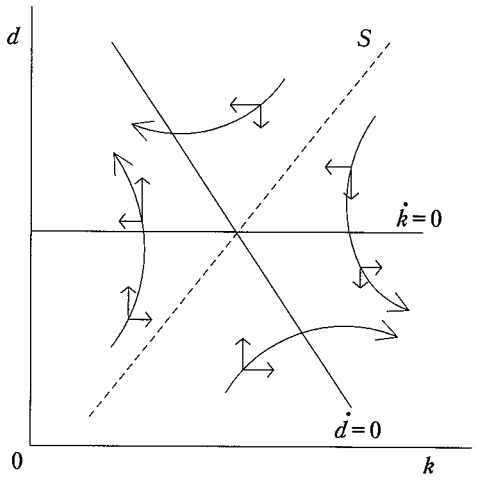


Figure 3

This depreciation leads to a decline in debt, while the decline in debt tends to restore the budget deficit and the growth in the long run from equation (14).

This argument has important implications for the adjustment program that depends on budget deficit cuts. Let us suppose that the initial situation is located in the area to the left of the saddle path corresponding to the actual Latin American situation with a heavy debt burden and a low capital/labor ratio. If the debtor accepts a program based on budget deficit cuts, the most undesirable results will appear and the program will be abandoned. It is clear that some kind of debt relief is needed in this case. A debt relief can move the initial condition to the right of the saddle path by giving up some portion of the initial debt stock. Once the initial condition moves to the area to the right of the saddle path, then the economy can follow the favorable dynamic path. Therefore, combining debt relief with budget deficit cuts would be a necessary condition for a debt strategy that intends to assure economic growth and debt reduction without political pressures in the long run.

IV. CONCLUDING REMARKS

The above discussion has four main conclusions.

(1) The fundamental causes of the external debt in developing countries can be attributed to the appreciated real exchange rate and the budget deficit.

(2) Under the assumptions that internal balance is always kept and that investment mainly depends on the budget deficit, the model shows that the policy rules which adjust the real exchange rate or the budget deficit according to changes in debt will each bring unstable dynamics. This suggests the importance of an adjustment policy which combines two policy rules.

(3) Under the real exchange rate rule, the economy has only two possible choices in the long run: either both the economy and the debt continuously grow or both reduce. On the other hand, under the budget deficit rule, there are two extreme possibilities: the most unfavorable case in which the economy shrinks and the debt accumulates, and the most favorable case in which the economy grows and the debt reduces in a continuous way.

(4) When the debtor country faces a high initial debt stock and a low capital/labor ratio, debt relief is needed to assure a favorable dynamic path, adding to the budget deficit cut.

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