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Introduction

In the open economy macroeconomic literature, two policy instruments have been proposed to deal with the current account adjustment. One achieves the policy objective by changing the relative price structure of the economy, while the other attempts to change the aggregate income-absorption relationship without necessarily changing the relative price. Currency devaluation or revaluation in the elasticity approach literature may be regarded as an example of the former alternative; adjustment of the monetary and/or fiscal policy in the Keynesian literature under fixed exchange rates is an example of the latter. We shall hereafter call the first option “the relative price policy” and the second option “the absorption policy”.

Traditionally, the analysis of the balance of payments adjustment process has mainly concerned with the positive level, although not without some important exceptions such as the policy coordination theory. Recent developments of the microeconomic approach to macroeconomics (see Frenkel-Razin (1987, parts 3 and 4), Blanchard-Fischer (1989) etc., have made possible the analysis also on the normative level, because of the explicit inclusion of the optimization process as an indispensable part of theorizing.

The purpose of this note is to apply the approach to evaluate the welfare implications of the two macroeconomic policy options, i.e., the relative price policy and the absorption policy. The analysis will be carried out in an intertemporal framework, implying that the interest rate policy represents the relative price policy, and that an intertemporally combined lump sum tax-subsidy scheme represents the absorption policy. We shall show that the distortionary interest rate policy is better off than the combined lump sum tax-subsidy scheme, given the policy objective to regulate the current account balance at a predetermined level.

At the outset of the paper, we state explicitly that the Ricardian equivalence theorem is assumed not to hold in our paper. This assumption is made strategically. In macro-economic policy debates, questions often arise whether the fiscal

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policy—in particular, an increase or decrease in tax—is effective in controlling the aggregate demand. The Ricardian equivalence answers this question with a flat “No”, for any (temporary) change in taxation will generate a corresponding change in private saving. In terms of open economy macroeconomics, it further implies the equivalence of the burden of external and internal public debt (see Mutoh (1985)). If the theorem corresponds to reality, this article should immediately stop at this point, for the assumed tax-subsidy policy (i.e., the absorption policy) is not effective at all in regulating the current balance.

Although this is essentially an empirical question, one may doubt whether any consensus will emerge in the near future. Those who feel concerns over the persistent current deficit of the United States often suggest a tax increase as appropriate to reduce the deficits. Yet, for those who believe in the Ricardian equivalence proposition, a (temporary) tax increase has no effectiveness in regulating the current balance. Instead of going further in this direction, what we attempt here is rather to assume strategically that the Ricardian equivalence does not hold. This means that the absorption policy in our model is at least effective. However, it may not be true that the absorption policy is efficient in terms of welfare implications. Indeed, what we would like to show by our exercise is that the absorption policy is less efficient than the relative price policy. Even if the tax policy may be effective, it is less appropriate than the relative price policy.

The Model

Suppose a small country facing an international capital market where it is possible to freely lend or borrow at an internationally given real rate of interest r . PSP' in Fig.1 represents the production possibility frontier of this country. The production structure of this economy is the same as that of Frenkel-Razin op. cit. (ch. 5). C_0 measures the current period goods and C_1 measures the future period good. At the beginning of the current period, the economy is endowed with the “national income”, OP, which is either consumed or invested. For simplicity, we assume no endowment at the beginning of the future period.

Because the real rate of interest is r , the investment will be determined at a level where an unit investment marginally produces $1+r$ units of the future goods (i.e., the marginal rate of return of investment is r). In Fig.1, the intertemporal budget constraint SD (with $1+r$ as the slope) is tangential to the production possibility frontier PSP'. The production is in equilibrium at S, with OC_0' supplied domestically for consumption purposes, and $C_0'P$ invested. The investment $C_0'P$ generates the consumption goods SC_0'' in the future period. We shall abstract from risk, uncertainty or all other contingencies.

Turning now to the demand side, we assume that this country has relatively higher rate of time preference. The (community) indifference curves between C_0 and C_1 are biased towards the horizontal axis. The consumption equilibrium, with given r , takes place at D.

Under the competitive equilibrium, the economy runs a deficit BD in the current account transactions of the present period. In terms of the absorption-income relationship, the aggregate absorption is $C_0'P$ (investment) plus $OC_0''+BD$ (con-

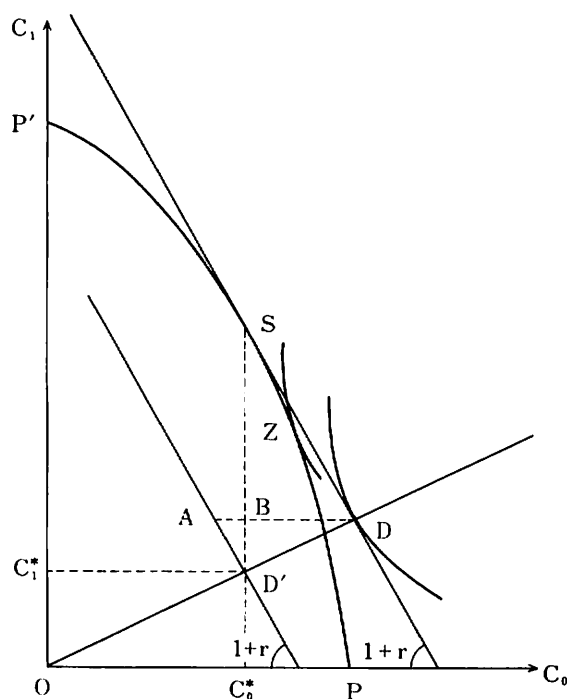


Fig. 1.

sumption); the GNP of the present period is equal to OP . The difference between the absorption and income, BD , is imported from abroad, and the payment for the imported goods is financed by borrowing from abroad at the rate of interest r .

In the future period, the borrowing will be reimbursed by exporting SB of the future goods; the surplus in the current account will be SB minus $r \cdot BD$, where $r \cdot BD$ is the deficit in the debt service account. Because SB is equal to $(1+r)BD$, the amount of the current account surplus is equivalent to the debt that this economy incurred in the first period. Under the competitive equilibrium, the economy runs a current deficit in the first period, and a surplus in the future period. Taking the two periods together, this economy's current balance is in balance.

Options for current account adjustment

Facing this situation, suppose the policy authorities of this country - at the beginning of the first period-have decided to eliminate the current account imbalance. The reason for the decision is not our concern here. The authorities may possibly be afraid of losing foreign reserves in the first period (notice that a reduction in the foreign reserves is a way to finance the current account deficit), or they may be forced to reduce the imbalance due to international policy coordinations. In any case the decision implies a departure from the competitive optimality depicted by the points S and D . The role of the authorities then is to find a way that achieves the policy objective at a cheaper social cost.

For the sake of simplicity, suppose the policy objective is to eliminate com-

pletely the imbalance in the current account in both periods. Suppose also that the authorities aim at achieving the objective without running additional budget surplus or deficit. Two options are available: a) first, the imbalance is reduced to zero by simply prohibiting the access of the private sector to the international capital market; b) second, it is eliminated by imposing a lump sum tax in the present period, combined by a lump sum subsidy in the next period. Assuming the Ricardian equivalence theorem not to hold, the latter option can affect the absorption. The former option is achieved by imposing a prohibitive international capital transactions tax¹⁾, which, by definition, raises no tax revenue. This tax is an example of the "relative price policy", while the second option, a lump sum tax-subsidy scheme, is an example of the "absorption policy". We shall compare the welfare implications of the two policies.

The absorption policy

Consider the lump sum tax-subsidy scheme first. Suppose for simplicity that the indifference curves are homothetic. The income-consumption line, OD, is straight from the origin. When the authorities impose a lump sum tax AD, the budget line shrinks to AD' (parallel to AD) and the consumption occurs at D'. The equilibrium at D' implies that the total absorption of the private sector (in terms of the present period goods) is OC_0^* (for consumption) plus C_0^*P (for investment). Because the total absorption exceeds the total disposal resources available to the private sector (i.e., the endowment OP minus AD, the tax), the private sector must borrow from abroad (either to finance the consumption or the investment) at the going international rate of interest. The capital import of the private sector must be equal to the difference between the disposable income and the absorption, i.e., $(OP - AD) - (OC_0^* + C_0^*P) = -AD$.

What happens to the authorities that have raised the tax revenue AD? Recalling that our authorities do not attempt to run additional budget surplus or deficit, we assume that the tax revenue is immediately spent by the authorities in order to purchase the foreign securities (capital exports). This assumption must be made, for the authorities in the next period must pay out a subsidy in order to achieve the policy objective of keeping the current balance zero in both periods.

What happens to the balance of payments of this country as a whole? On the current account side, the (net) import of the country is simply zero²⁾. On the capital account side, the private sector imports capital while the government sector exports capital. The assumed behavior of the authorities implies these capital movements to cancel each other; the balance of capital account is also zero.

Absorption policy in the second period and its welfare implications

So far we have analyzed what happens to the balance of payments in the first period if the absorption policy is pursued. What happens in the second period is similarly explained. In the second period, the supply of goods by the private sector is SC_0^* , out of which the private sector purchases $D'C_0^*$; the rest, SD' , is exported

abroad to pay for the debt incurred by the private sector in the first period. The government, on the other hand, sells the foreign securities holdings, which are now worth $(1+r)AD = SD'$. As in the previous period, the authorities are assumed to avoid additional budget surplus by paying out this amount as a subsidy to the private sector. Using the subsidy, the private sector imports the goods as much as SD' . Taken together, SD' as the difference between the output SC_0^* and the pre-subsidy consumption C_0^*D' , and SD' as the private sector's import purchased by spending the subsidy, completely cancel out. Therefore, the aggregate consumption in the second period is SC_0^* , which is equal to the national income of that period. With the two-period model where no investment takes place in the second period, the current balance of the second period is again zero.

The absorption policy therefore achieves the policy objective of keeping the current account at zero throughout the two periods. Taken together, the consumption by the private sector is shown by the point S (OC_0^* for the first and SC_0^* for the second periods), which is inferior to the competitive optimality shown by D. Further to be recognized is that the point S is generally inferior to the closed economy competitive equilibrium, because the (community) indifference curve cannot be tangential to the budget line at S. In fact, the closed economy equilibrium, Z, must situate somewhere south-east of S on the production frontier. By definition, the marginal rate of transformation and the marginal rate of substitution are equalized at Z by the interest rate, which is endogenous in the closed economy.

The closed economy equilibrium at Z, however, is achieved even in the open economy once an appropriate tax on international capital transactions is introduced. In particular, a prohibitive tax on international capital transactions - which raises no revenue and runs no additional budget imbalance - can induce the open economy to the virtually closed economy equilibrium at Z, where the current balance is always zero. Z, however, is superior to S from the standpoint of the implied welfare. The prohibitive tax on capital movements achieves the same policy objective of keeping the current account at zero at a cheaper social cost than does the "absorption policy".

Some remarks

Having proved that the absorption policy is less desirable than the relative price policy, several remarks are in order.

First, the entire argument developed here is an application, in a sense, of the second best theory³⁾. In the framework of the model developed here, the first best "policy" is to induce the economy to the competitive optimality at S and D. The policy objective of the authorities, to eliminate the current account imbalance pertaining to the competitive optimality, has imposed a constraint that introduces a new distortion to this economy. Under this constraint, which virtually forces the economy to return to the closed one, the welfare implications of the alternative policies must be compared. In this second best framework, it is not surprising that the seemingly non-distortionary lump sum tax-subsidy scheme is inferior to the seemingly distortionary tax on international capital transactions.

Second, the validity of our argument is partly due to the assumed endogenous

growth of the economy where the level of investment is optimally chosen as a function of the interest rate. To recognize this point, suppose no endogenous growth. Assume instead that the current period endowment is OC_0^* , and the future period endowment is SC_0^* . The production possibility frontier degenerates to a rectangle with O and S as opposite corners. S and Z then coincide - i.e., the two policies have the same welfare implications.

Thirdly, some remarks are made from the standpoint of the policy assignment theory. In the framework of this model, the policy objective is to eliminate the imbalance in the current account. The current account, in turn, is the difference between the national saving and the national investment, both of which are determined once the interest rate is given. By controlling the interest rate, the current account balance is affected both through the supply side (production frontier) as well as the demand side (consumption and saving). In contrast, the effect of the tax-subsidy policy on the current balance works through the demand side alone, leaving the supply side uncontrolled. This is the reason why the tax-subsidy policy is less appropriate than the interest rate policy to regulate the current balance. In terms of the policy assignment theory, the latter has a comparative advantage over the former as an instrument for the current account adjustment. Obviously enough, the comparative advantage of the interest rate policy disappears once the production possibility frontier degenerates to a rectangle, for the effectiveness of any policy stems from its demand side effect alone in this case.

Whether the current account balance must be adjusted by the relative price policy or by the absorption policy has frequently caused lively policy debates. It is perhaps fair to say that the debate has been mainly, and too often, carried out on the level of effectiveness. One may doubt whether the relative price policy can effectively control the saving and investment. One may also doubt, from the standpoint of the Ricardian equivalence proposition, whether a tax change can effectively affect the consumption.

Although the effectiveness is an important issue, there remains another important one: out of the assumedly effective policy instruments (and we have indeed assumed the effectiveness of the tax policy by postulating that the Ricardian equivalence does not hold), one must distinguish appropriate from inappropriate instruments in terms of the associated welfare. Addressing this issue from the second best theory, it has been shown that the relative price policy outweighs the tax policy as an instrument to promote the current account adjustment. The result has some implications to the current account deficit problem of the United States, where a number of economists hasten to conclude that a tax increase is the only way out.

Notes

- 1) There is a similarity between this tax and the so-called Tobin-Dornbusch tax, although the latter is concerned more with the short term capital transactions in which speculative activities matter greatly.
- 2) The initial debt position is assumed zero. The current and the trade accounts coincide in the first period.
- 3) I owe this point to Atsushi Tsuneki to whom I thank.

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