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A NOTE ON THE MONETARY APPROACH TO
THE BALANCE OF PAYMENTS

by

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A Note on the Monetary Approach to
the Balance of Payments*

Joanne Salop

The monetary approach to the balance of payments has received a lot of publicity in recent months; nevertheless, there remains considerable confusion as to precisely (1) what it is, (2) what it assumes, and (3) what it contributes. In this paper I propose answers to these questions, restricting coverage to the theoretical issues.

In answer to the first question I put forward the following interpretation: The monetary approach covers a continuum of models which stress money creation as the important determinant of the balance of payments. This definition can be transformed into the conventional definition of the absorption approach by substituting absorption, government spending, and trade for the underlined words. In addition to leading to this interpretation, the strong similarities between the two approaches suggest the following analogy which is explored in this paper: The monetary approach is to the balance of payments what the absorption is to the balance of trade.

In answer to the second question I point out that, although the two approaches are parallel in every respect, the monetary approach most commonly appears as a small country model,^{1/} while the absorption

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^{1/} See e.g. Harry G. Johnson, "The Monetary Approach to Balance of Payments Theory," Journal of Financial and Quantitative Analysis, March, 1972.

approach is usually seen as a large country model.^{2/} This difference distinguishes the kinds of results usually associated with the two approaches -- the monetary approach, because of the small country assumption, produces the strong and erroneous predictions we expect from partial equilibrium analysis; whereas, only the vague qualitative predictions expected from general equilibrium models emerge from the absorption approach's large country model. This difference has made devotees of the absorption approach suspicious of the monetary approach, and, it is to dispel these suspicions, that I show that (1) neither the small country assumption nor its strong quantitative results are essential to it; and (2) we can derive the monetary approach from the absorption approach and vice versa.

In assessing the contribution of the monetary approach, I submit that the monetary approach is an insightful extension of the absorption approach. It has provided a framework for analyzing the balance of payments, comparable to that which the absorption approach established for the trade account; no more and no less.

In the remainder of this paper the following strategy is employed. First, I develop the monetary approach as it most often appears, i.e. as a small country model with a precise quantitative relation between the autonomous flow supply of money and the balance of payments. In the attendant discussion I try to give a flavor of

^{2/} See e.g. S. C. Tsiang, "The Role of Money in Trade-Balance Stability," AER, December 1961.

the differences between "monetarists" and "non-monetarists" in interpreting this basic model. Second, I derive the absorption approach's small country model, which depicts an equally precise quantitative relation between government spending and the balance of trade. Third, I show that neither is an apt description of the large country situation, and that both models, because they ignore feedback effects on variables assumed to be exogenous, systematically overestimate the impact of their particular policy variable on their respective balance. Furthermore, even when the small country assumption is appropriate, the posited relations hold for actual variables, only if plans are realized (only if perfect price flexibility clears all markets instantaneously), because the equations express relations between "notional" variables. Fourth, I review the large country absorption model, and suggest an extension of the monetary approach in this direction. Both of these models preserve the qualitative relationships embodied in the corresponding small country versions, while relinquishing the strong quantitative relations posited there. Finally, I show how the monetary approach can be derived from the absorption approach.

I. The Small Country Monetary Approach

The monetary approach proceeds from the following equality between the flow demand for money (FDM) and the flow supply of money (FSM).

$$(1) \text{ FDM} = \text{FSM}$$

The flow demand for money depends on the variables which determine the stock demand for money, such as interest rates, income, and wealth and their rates of change. The flow supply of money comes from the Central Bank via two avenues, namely, autonomous money creation (open market operations) and money creation induced by foreign exchange purchases, i.e. the balance of payments. Utilizing this fact we can say that the balance of payments (BOP) equals the difference between the flow demand for money and the autonomous flow supply (FSM_A). Substituting the components of the flow supply of money into equation (1), we have

$$(2) \quad BOP = FDM - FSM_A$$

Equations (1) and (2) were popularized by monetarists; nevertheless, they are considered valid by virtually all economists. The disagreement between monetarists and non-monetarists arises over the pressures which maintain these equations. In general, non-monetarists believe that flexibility in the determinants of both the flow demand for money and the balance of payments keeps the equality. On the other hand, monetarists tend to believe that the determinants of the flow demand for money are exogenous, and that the balance of payments does all the adjustment required. This conviction is embodied in equation (3), which is fundamental to the most common variant of the monetary approach.

$$(3) \quad BOP = \overline{FDM} - FSM_A$$

The exogeneity of the determinants of the flow demand for money, denoted by the bar over FDM, is rationalized in this model by assuming the country is so small, that the variables which determine its demand for money are beyond its control. That is, interest rates, income, wealth, and their rates of change are determined by exogenous forces. And as a result of this assumed exogeneity, the autonomous flow supply of money and the balance of payments have the exact inverse relationship expressed in equation (3) -- a unit increase in the rate of currency creation by the Central Bank reduces the balance of payments by one unit.

Monetarists explain this by saying that increases in the autonomous flow supply of money cannot affect the exogenously determined flow demand, and instead reduce the induced portion of the flow supply by a corresponding amount. Interpreting the same model, non-monetarists would say that increases in the demand for goods and assets financed by money creation cannot raise prices or the rate of inflation, which are set by the rest of the world, and instead displace foreign demand net and thereby reduce the capital account, the trade account, and their sum the balance of payments. Thus one difference between monetarists and non-monetarists lies in the interpretation of the small country model. Monetarists concentrate on the single market for money; whereas, non-monetarists focus on the obverse markets for goods and assets. This seemingly-only-semantic difference takes on genuine

importance, however, when we move from the small country model to the real world. In that more complex setting non-monetarists would complicate their analysis with endogenous considerations (they question whether an increase in the autonomous rate of money creation has no effect on output and prices); while monetarists tend to retain the simplicity embodied in equation (3). This tenacity may reflect the belief that the properties of the small country model are fairly descriptive of the real world. But before exploring this questionable contention, I first introduce the absorption approach's small country model, to which that discussion is also germane.

II. The Small Country Absorption Approach

The absorption approach covers a continuum of models from the small country Classical to the large country Keynesian which emphasize aggregate demand as the crucial determinant of the balance of trade. Although authors using it customarily assume a large country full employment model, we can easily develop a small country version similar to that commonly assumed by those using the monetary approach. To substantiate the parallel between the absorption approach and the monetary approach we derive the absorption approach's equivalent to equation (3). To this end we begin with equation (4) which represents the goods market of the open economy. Output (Y) equals the sum of

consumption (C) plus investment (I) plus government spending (G) plus the balance of trade (BOT).

$$(4) \quad Y = C + I + G + BOT$$

Substituting saving (S) for output minus consumption, we derive the basic equation of the absorption approach, analogous to equation (2) of the monetary approach.

$$(5) \quad BOT = S - I - G$$

By invoking the small country assumption, thereby making the determinants of saving and investment exogenous, we derive the following parallel to equation (3).

$$(6) \quad BOT = \bar{S} - \bar{I} - G$$

where the bars over S and I denote their exogeneity. Equation (6) displays the same one-to-one inverse correspondence between government spending and the trade balance, which equation (3) records between the flow supply of money and the balance of payments.

III. Shortcomings of the Small Country Models

While equations (3) and (6) give strong quantitative predictions of the balance of payments and the balance of trade respectively, their accuracy in the real world situation is limited by the assumptions of small country and full employment. In fact the predictions are correct only if prices and the rate of inflation as well as the other determinants of the flow demand for money in the

one case and saving and investment in the other, are not affected by changes in the policy variables money creation and government spending. To the extent that this assumed independence is unwarranted, equations (3) and (6) overestimate the impact of policy on the accounts. This can be seen in the following example which shows that each approach overestimates the impact of its policy variable on its respective account, when applying the small country model to the large country situation.

Consider a permanent increase in the rate of autonomous money creation, used by the government to increase its rate of spending on goods and services. If the country is not "small", then even if nothing else is changed by the increase in demand, prices do rise, raising the nominal values of the flow demand for money and saving and investment. Thus relying on equations (3) and (6), and interpreting them as nominal relations,^{1/} we overestimate the influence of policy on the balance of payments and the balance of trade.

A second limiting assumption is full employment, or more precisely, perfect price flexibility. The following scenario illustrates

^{1/} If we interpret these equations as relations between real variables, we similarly overestimate the influence of policy. But in this case the discrepancy arises from our failure to feed in the correct real values for the flow supply and government spending. Relying on the small country assumption of exogenous prices, we overestimate the real value of the money creation and the expenditure since we fail to take account of the endogenous price effect. This error causes us to overestimate the resulting reduction in the real values of the balance of payments and balance of trade.

that even when the small country assumption is appropriate, equations (3) and (6) are correct only if notional^{1/} demands equal actual demands. Otherwise unresolved disequilibrium in other markets shows up in the market for the flow demand for money in the one case and traded goods in the other, thereby disturbing the unique relations posited in these equations.

As an illustration, consider a shift in demand away from home goods toward exports. There result, in the first instance, a net excess supply of home goods and an excess (of notional over actual) flow demand for other goods, money, and bonds.^{2/} These markets are ultimately cleared by a fall in the price of home goods; however, with sticky prices, the excess supply of home goods remains, and with it the positive difference between the notional and actual flow demands for money,^{3/} and between notional and actual savings.^{4/}

^{1/} Notional demands are like planned demands. They refer to the fact that one formulates his savings, consumption, et al plans conditional on his selling his output or labor at the going price. If he cannot sell his output, then his actual purchases (or savings at least) are constrained, and diverge from their notional or planned values.

^{2/} Assuming, of course, that the would-be seller would purchase goods, money, and bonds with his proceeds.

^{3/} If the would-be seller would acquire no additional money balances with his proceeds, then the disequilibrium in the goods market would not affect the net balance of payments, although it would alter the composition, by improving the capital account and worsening the trade account.

^{4/} An alternative is to count the unsold goods as unplanned inventory accumulation; i.e. as investment. Thus planned and actual investment diverge.

In this case even if the autonomous flow supply of money equals the notional flow demand, resulting in balance of payments equilibrium according to equation (3); there is, nonetheless, an actual balance of payments deficit, since the flow supply exceeds the actual flow demand. Similarly, equation (6) might predict a zero trade balance, based on equilibrium saving behavior; however, this prediction is correct only if actual and notional saving are equal. Otherwise, the wherewithal to save and acquire money balance as desired, remains locked within the unsold goods, appearing in the accounts as if these goods are consumed domestically. This suggests that if there is not sufficient price flexibility in the system to keep markets cleared, equations (3) and (6) may overestimate the balance of payments and the balance of trade.

IV. The Large Country Models

This discussion clearly does not imply that the monetary approach and the absorption approach have nothing to contribute to large country analysis. On the contrary, the most common absorption model is a large country model, and it is relatively easy to build a comparable model utilizing the monetary approach. These large country versions allow prices to be influenced by the policy variables, and, as a result of their simple structure, make only qualitative predictions about the effects of money creation and government spending on the balance of payments and the balance of trade. Thus the large

country absorption approach predicts that an increase in government spending raises prices and deteriorates the trade balance. The degree of deterioration, however, can be ascertained only with a more detailed general equilibrium model which explicitly specifies the structure of the model, enabling us to determine the ultimate effects of government spending on prices and the components of aggregate demand, most notably imports and exports. Similarly the monetary approach should predict only that an increase in money creation deteriorates the balance of payments, but not by how much. Again we need an explicit model to specify the exact effects of money creation on prices and the other determinants of the flow demand for money, in order to make a quantitative prediction about the precise effect of money creation on the balance of payments.

Turning to the absorption approach, I rely on the most common full employment model as found in Tsiang's classic article.^{1/} In its simplest form it starts with equation (5) and fills in the arguments as follows.

$$(7) \text{ BOT } (P, \bar{Y}, \bar{Y}_w) = S(\bar{Y}) - I(r) - G$$

The determinants of the trade balance are the relative price of U.S. goods (P), the exogenous full employment level of income at home (\bar{Y}), and the exogenous full employment level of world income (\bar{Y}_w). Saving

1/ Op. cit.

is assumed to depend only on income, and investment on the rate of interest (r).

An increase in government spending raises the relative price of U.S. goods and deteriorates the trade balance. We also know that the real value of investment falls, in response to the consequent rise in the interest rate, by less than the real value of government spending rises, so as to keep both sides of equation (7) in line. Clearly equation (7) does not give us a tight quantitative relation like that found in equation (6), but it does preserve the qualitative relationship between government spending and the trade balance posited there.

Using the absorption model as our guide, we can develop a large country monetary approach starting with equation (2). Substituting the balance of trade plus the capital account (CA) for the balance of payments, we have

$$(8) \quad BOT + CA = FDM - FSM_A.$$

Assuming that the increase in government spending just considered is financed by money creation, we know that the real value of the autonomous flow supply of money rises. (Even though prices rise in response to it, they must rise by less than the nominal flow supply, in order to generate the expansionary effects which cause the price increases). Furthermore, because the interest rate rises as noted above, the real flow demand falls. On both counts, then, the balance of payments deteriorates. In terms of equation (8) this says that even if the

capital account improves from the rise in the interest rate, the previously mentioned reduction in the trade balance must dominate, and result in a decline in the balance of payments.

V. From One Approach to the Other

Not only are the two approaches parallel, but by Walras' Law we can derive one from the other using the budget constraints facing the three sectors and a third exhaustive market, in this case the market for bonds. To this end I enumerate the budget constraints facing the private sector, the business community, and the government. Then I derive the (flow) market clearing equation for bonds. Finally I demonstrate that with this information plus the market for either goods or the flow of money, we can derive the other market. In other words this information is sufficient for deriving the monetary approach from the absorption approach and vice versa.

The following equation represents the budget constraint facing the private sector.

$$(9) \quad Y = C + FDM + FDB$$

This says that income^{1/} equals the sum of consumption plus the flow demands for money and bonds. Substituting saving for income minus consumption, we get the following revised constraint.

$$(10) \quad S = FDM + FDM.$$

^{1/} Since taxes are assumed to be zero, income and output are identical in this model.

The relevant constraint facing the business community refers to its financing of investment. Specifically it is assumed that all investment is financed through private bond sales (FSB_p). Thus we have

$$(11) \quad I = FSB_p.$$

Similarly it is assumed that the Treasury finances its expenditures by bond sales.

$$(12) \quad G = FSB_T$$

We can incorporate monetary policy explicitly into the government's constraint, by noting that the Fed determines the relative supplies of bonds and money through its open market operations. Writing the government's overall budget constraint to include money creation, we add the Fed's flow supply of money (FSM_A) minus its flow demand for bonds (FDB_F)^{1/}, which sum to zero, to the right hand side of equation (12).

$$(13) \quad G = FSB_T - FDB_F + FSM_A$$

We are now in a position to rewrite equation (5) incorporating the financial equivalents for S, I, and G obtained from these budget

^{1/} If $-FSB_T + FDB_F < 0$, then the Fed is buying fewer bonds than the Treasury is issuing, and the effect of the deficit is to increase the supply of bonds and money. On the other hand, it is possible for $-FSB_T + FDB_F > 0$, in which case the Fed is buying more bonds than the Treasury is issuing, resulting in an increase in the money supply and a decrease in the supply of bonds.

constraints. Doing this we have the balance of trade as it relates to financial flows.

$$(14) \text{ BOT} = (\text{FDB} + \text{FDM}) - \text{FSB}_P - \text{FSB}_T + \text{FDB}_F - \text{FSM}_A.$$

Next we introduce the market for the flow of bonds. Writing the equilibrium condition for this market, we have the following.

$$(15) \text{ FSB}_P + \text{FSB}_T + \text{FSB}_M = \text{FDB} + \text{FDB}_F + \text{FDB}_X$$

This says that the sum of the flow supply of bonds from the three sources private investment (FSB_P), the Treasury (FSB_T), and foreigners (FSB_M), must equal the sum of the flow demands from the three sources private savings (FDB), open market purchases (FDB_F), and foreign purchases (FDB_X). Substituting the capital account (CA) for our net exports of bonds ($\text{FDB}_X - \text{FSB}_M$) and rearranging the terms in equation (15), we get a condition comparable to equation (14).

$$(16) \text{ CA} = \text{FSB}_P + \text{FSB}_T - \text{FDB}_F - \text{FDB}$$

Utilizing equation (16) in conjunction with the accounting identity

$$(17) \text{ BOP} = \text{BOT} + \text{CA},$$

we can derive equation (2) from equation (5), i.e. the monetary approach from the absorption approach, and vice versa. For expositional purposes I add equation (14) and (16). They sum to

$$(18) \text{ BOT} + \text{CA} = \text{FDB} + \text{FDM} - \text{FSB}_P - \text{FSB}_T + \text{FDB}_F - \text{FSM}_A \\ + \text{FSB}_P + \text{FSB}_T - \text{FDB}_F - \text{FDB},$$

which reduces to

$$(19) \text{ BOP} = \text{FDM} - \text{FSM}_A$$

Similarly we can subtract equation (16) from equation (19) and get equation (14).

This shows that the theoretical foundations of the monetary approach and the absorption approach are the same. It is in the realm of model choice and interpretation that the two approaches diverge.

VI. Conclusions

In summary, the monetary approach to the balance of payments relies on the small country assumption to generate the strong quantitative relation between the (autonomous) flow supply of money and the balance of payments. Making the same assumption, we can derive from the absorption approach an equally strong quantitative relation between government spending (on goods and services) and the balance of trade.

If the small country assumption is relaxed, then we are in a general equilibrium world, in which credit creation plays a less prominent, but still important, role in determining the balance of payments. Although the qualitative impact of credit creation on the balance of payments predicted by the monetarists carries over, the strong quantitative relation does not. This is analogous to the conventional absorption approach model, in which we know the signs but not the magnitudes of the changes wrought by policy.

The monetary approach, as expressed in equation (2), is a suitable framework for thinking about the balance of payments, comparable to that which the absorption approach, equation (5), provides for the balance of trade. On the other hand, equations (3) and (6), while interesting theoretical models with nice properties, are extreme cases and misleading as policy models. This, of course, explains much of the resistance to the monetary approach from those quarters which embrace the absorption approach: The absorption approach usually appears in its qualitative, albeit weak, form expressed in equation (5). The monetary approach, in contrast, most commonly appears in its extreme but quantitatively strong form expressed in equation (3).