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The Macroeconomic Effects of Counterpart Funds and the Underlying Foreign Aid

Prepared by Christian Mulder 1/

Approved by Reimer O. Carstens

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Abstract

Counterpart funds generated through foreign currency or commodity aid have again become an issue of interest, in view of the substantial buildup of these funds. Contrary to the usual approach a model is developed in this paper, which takes account of the budgetary impact, supply-side and money demand effects of counterpart funds and the underlying foreign aid. This model is used to show that counterpart funds need not have any economic impact if their creation, use, and effects are adequately monitored and understood, both by donors and by the authorities in the recipient country.

The policy rules that ensure an inflation- and foreign reserves-neutral result from expected and unexpected foreign aid are derived and contrasted with a policy rule regarding unexpected foreign aid that is sometimes observed in IMF programs. A feasible alternative is developed. Various real world complications are shown not to alter the conclusions.

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### Summary

Counterpart funds generated through foreign currency or commodity aid have again become an issue of interest, as a result of the substantial buildup of these funds in developing countries, notably in Africa. Previous studies concluded that counterpart funds have an inflationary impact on the economy and that tied and irregular aid should be avoided. Those conclusions were derived in a partial equilibrium context and implicitly assumed that governments do not react optimally.

In this paper a small general equilibrium model is developed, which includes not only the key government instruments and constraints but also a wide range of effects that counterpart funds and the underlying aid exert on the economy (supply-side, money demand, money supply, and balance of payments effects). It demonstrates that credit to the government adjusted for counterpart funds is relevant for the inflation rate, the foreign reserve position, and other variables in the economy. Counterpart funds have no independent role to play and hence do not give a government any extra degree of freedom or room to maneuver, implying that, if their role is well understood, they need not do any harm nor provide any leverage to donors.

The aid underlying the counterpart fund creation has real effects. For foreign currency aid the effects on the economy can be delayed, as the aid can effectively be "stalled," just as if it is held in a foreign account. Commodity aid, however, cannot be stalled once it is sold or handed out in the recipient country. If donors want counterpart funds resulting from the sale of commodity aid to be spent on earmarked targets not included in the standard government budget, it should be done when the commodities are sold, and not later, because it is then that the resources in the economy are expanded and government revenue increases. The establishment of a regular, well-planned aid process is required. Irregular, nonfungible, tied commodity aid poses a problem, in the sense that it might lead to an irregular budget deficit and thereby to irregular taxation or credit to the private sector. Various practical issues that are sometimes seen to obscure the impact of counterpart funds do not substantially alter these conclusions.

The model developed in this paper also yields some conclusions regarding unexpected aid and program design. Reducing credit ceilings by the amount of unexpected aid, a requirement sometimes included in Fund programs, is found to be suboptimal. A different set of contingency rules or program requirements is derived, which allows some freedom in the use of unexpected aid by the recipient country if other circumstances permit it, and makes it more enticing for donors to give additional aid.



## I. Introduction

Counterpart funds, that is, the local currency counterpart of foreign aid, are often thought to be inflationary, in particular if they make up a large part of the money supply or if their buildup is irregular (Clement 1989, Roemer 1989). The basic idea is that the spending of counterpart funds, if not sterilized, leads to an increased money supply, just as higher foreign reserves do. This would fuel demand and lead to higher prices. However, the issue is more complicated than that. Counterpart funds also have a budgetary impact and can, through the underlying foreign aid, have various indirect effects for example, on the supply side, the demand for money and the foreign reserves position.

The basic question regarding the inflationary impact of counterpart funds dates back to the period of Marshall Plan aid and before (Lachman 1968). More recently the issue of counterpart funds has arisen in the context of Africa, where large-scale food aid, foreign currency contributions and commodity donations to raise the money for the local currency expenditure of development projects have led to sizable counterpart funds. In the case of Madagascar, for example, counterpart funds amount to around 60 percent of broad money supply. 1/

Traditionally the question regarding the economic impact of counterpart funds has been approached descriptively (Khatkhate 1963), sometimes with the aid of balance sheet manipulations (Bruton and Hill 1991, Clement 1989, Luttrell 1982, Maxwell 1991, etc.; the exception is an appendix in Roemer 1989 2/). By definition, such a partial equilibrium approach leaves loose ends, because if one manipulates only two items in a budget constraint or balance sheet, the other items will almost certainly no longer be equilibrium values. This approach does not lend itself well to include more than the monetary aspects of counterpart funds -- the budgetary implications of counterpart funds and the more indirect effects on the supply side and money demand are generally omitted or not integrated. Moreover, although the potentially harmful effects have been examined, there has been no systemic study of the possible governmental response that could avoid or mitigate these effects. Roemer (1989), for example, implicitly sees a rational money supply offsetting reaction by the government if there is no

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1/ Note that in the International Financial Statistics, country-owned counterpart funds are usually recorded as government deposits and foreign-owned counterpart funds as foreign liabilities (IMF 1984). Data regarding counterpart funds quoted in Bruton and Hill (1991) and based on the IFS reflect only mutually owned counterpart funds and underestimate the total amount of counterpart funds considerably. This underestimation must be kept in mind. For example because one of the main conclusion of Bruton and Hill (1991), that counterpart funds have a limited inflationary impact, is based to a large extent on the small size they think counterpart funds have.

2/ The model is not easily solved analytically, however, because it contains an arbitrary lag. The budgetary impact of counterpart funds and foreign aid is not modelled, while the import equation cannot be derived consistently with the underlying budget constraints.

effect of commodity aid on imports, but if commodity aid replaces imports the government no longer reacts optimally and inflation can result. 1/

A small but fairly general model has therefore been developed to tackle the issue. In the context of this equilibrium model it becomes clear that counterpart funds -- or more generally foreign aid in kind or in currency -- need not be inflationary or have any other economic impact. In the case of commodity aid, the appropriate policy response will depend in particular on the supply side, the money demand and import substitution effects of the aid. Also, in cases where matters are complicated by real world practices - such as recording counterpart funds before commodity aid is sold or effecting sales of foreign commodity aid for lower prices than agreed with the donors -- inflationary effects can be counteracted by the right policy measures. On the basis of this model it is also discussed which contingency rules should apply in case of unforeseen events, such as unexpected aid or a terms of trade deterioration.

The small equilibrium model that is developed consists of the basic accounting 2/ plus money demand framework of the monetary approach to the balance of payments (IMF 1977), supplemented by import and export equations and a government budget constraint. Embedded in these equations is a concave production structure that allows for the production of domestically used goods and export goods. The budget constraint of the government and the money supply equation are adjusted for the direct impact of counterpart funds. Indirect effects of foreign aid and counterpart funds are considered on the production structure or supply side, on money demand, on the flow of reserves and through import substitution.

The small model that is used to analyze the impact of counterpart funds and foreign aid is developed in Section II. The solution and policy results are derived in Section III. Unexpected shocks and real world problems are dealt with in Sections IV and V respectively. Conclusions are drawn in Section VI.

## II. A Small Equilibrium Model

The first basic effect of counterpart funds on the economy works through the money supply. Counterpart funds are normally kept in an account at the Central Bank, but these funds are considered to be less liquid than money because, among others things, they generally require agreement between the donor and the recipient government in order to be disbursed. For this reason counterpart funds are not defined as part of the money stock. In

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1/ The replacement of imports leads through higher foreign reserves to an increased money supply.

2/ That is a money supply equation c.q. budget constraint of the financial sector plus a flow of reserves equation c.q. balance of payments definition.

order to allow for counterpart funds, the standard money supply equation therefore has to be adjusted as in equation (1) (Table 1). The assets of the banking sector, net foreign reserves  $R$ , credit to the private sector  $C_p$ , plus net credit to the government  $C_g$ , no longer add up to money supply  $L$ , because money is no longer the sole liability. The counterpart funds  $C_f$  also form a liability to the banking sector, and thus the assets have to be corrected for this item. 1/

From this simple money supply equation it is clear that counterpart fund creation goes hand in hand with a reduction of the money supply and that counterpart fund spending increases money supply ( $\Delta L = -\Delta C_f$  if  $R$ ,  $C_p$ , and  $C_g$  are constant). Thus counterpart fund spending could be perceived as inflationary. However, it is also clear that this effect on money supply can be offset or sterilized by changing net credit to the government ( $C_g$ ) to the same extent, in the opposite direction. 2/ The direct effect on money supply is also avoided if the increase in counterpart funds goes hand in hand with an increase in foreign reserves ( $R$ ).

The second major direct effect of counterpart funds is that they (or more precisely, their spending or drawdown) are a source of government revenue. For the sake of simplicity it is assumed here that all aid and counterpart fund spending is channeled through the government budget and that all aid generates counterpart funds. 3/ In equation (2) (Table 1) two sources are specified that can finance the budget deficit (the excess of expenditure  $G$  over taxes  $T$ ): first, an increase in net credit to the

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1/ It can be inferred from the implicit derivation of the money supply equation from the adding up of the budget constraints c.q. balance sheets of the Central Bank and the private banking sector, that it is immaterial for this money supply equation whether counterpart funds are a liability of the Central Bank or the commercial banks. What is relevant is that they constitute a liability of the combined money creating financial sector and that they are not counted as part of the money supply.

A different matter is how the money supply target is achieved. This could be influenced by the division of counterpart funds between Central Bank and commercial bank accounts if indirect instruments of money supply control such as reserve requirements are used instead of direct credit control. Clement (1989) and Bruton and Hill (1991) conclude that the division matters, but they implicitly assume that the government indirectly controls money supply and does not change the instruments as it should.

2/ This, in essence, is the result of Khatkhake (1963).

3/ This is a harmless fiction. If aid does not generate counterpart funds this is in this set-up equivalent to immediate spending of those counterpart funds.

Table 1. Model Specification

$$L = R + C_p + C_g - Cf \quad (1)$$

$$G - T = \Delta C_g + Csp \quad (2)$$

$$\Delta Cf = F_g + F_k - Csp \quad (3)$$

$$R = R_{-1} + (X-M) + F_g \quad (4)$$

$$L = v(pq + p^*x + aF_k) \quad (5)$$

$$X = p^*x(p/p^*), \quad x' < 0 \quad (6)$$

$$M = m_p(pq + p^*x - T + \Delta C_p - \Delta L) - nF_k + m_g G \quad (7)$$

Endogenous: L, M, X, P, R, T, Csp

Exogenous:  $C_g, C_p, Cf, G, p^*, F_g, F_k$

R local currency equivalent of foreign reserves  
X nominal exports  
x quantity of export goods  
 $p^*$  price of the export good in terms of foreign currency  
 $F_g$  foreign currency aid in terms of local currency (general aid)  
 $F_k$  foreign commodity aid in terms of local currency (aid in kind)  
L money stock  
 $C_p$  credit to the private sector  
 $C_g$  net credit to the government  
Csp counterpart fund spending in terms of local currency  
Cf counterpart funds in terms of local currency  
T nominal taxes  
G nominal government expenditure  
q production of nontraded domestically used good  
p price of nontraded good  
M nominal imports, excluding imports of commodity aid  
 $\Delta$  first difference  
 $C = C_p + C_g - Cf$   
 $C_{gf} = C_g - Cf$   
 $F = F_g + F_k$



government; and second the spending of counterpart funds,  $C_{sp}$ . This latter term, counterpart fund spending, is by definition equal to foreign aid,  $F$ , minus counterpart fund buildup,  $\Delta C_f$  (see equation (3)). The government budget constraint can therefore also be written as,

$$G - T = \Delta(C_g - C_f) + F \quad (2')$$

It follows directly from this equation that it is not the size of net credit to the government or the size of counterpart funds as such that matters, but it is net credit to government after counterpart funds ( $\Delta C_g - \Delta C_f$ ) that is relevant, just as in the money supply equation (1). The function and role traditionally performed by  $C_g$  is now performed by  $C_g - C_f$ . <sup>1/</sup> To emphasize this point a term  $C_{gf}$  is introduced for  $C_g - C_f$ . The difference between equations (1) and (2') is that for the budget deficit, the flow of credit to the government after counterpart funds matters, whereas it is the stock which is relevant for the money supply. Equation (2') also draws attention to the fact that aid (ceteris paribus  $C_{gf}$ ) constitutes a real source of finance for the budget and in principle allows for expansion of expenditure or reduction of taxes.

Various other, indirect, effects accompany counterpart fund creation and spending. They work through the foreign aid from which the counterpart funds originate. A first indirect effect is the inflow of foreign reserves implied by foreign currency aid, or balance of payments support, as it is also called. <sup>2/</sup> Equation (4) thus shows that foreign reserves are built up both through net exports and foreign currency aid,  $F_g$ , under the fixed exchange rate regime assumed. <sup>3/</sup> <sup>4/</sup> The exchange rate is normalized to

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<sup>1/</sup> For the macroeconomic budgetary and monetary consequences of counterpart funds it is therefore immaterial whether the government or the donor or both of them own the counterpart funds.

<sup>2/</sup> IMF balance of payments support is not included since it is directly offset by an increase in foreign liabilities.

<sup>3/</sup> Imports of commodity aid are not included as a separate item in the equation for the foreign reserves, as they are not included in imports either and the effects cancel out.

<sup>4/</sup> Capital flows are assumed to be zero.  $F_g$  in the model is the net stream of aid, i.e., after paying interest and principal on previous aid, insofar as given in the form of soft loans. As long as foreign currency aid has only a monetary or budgetary impact on the economy, it does not make a principle difference whether the aid is in the form of a grant or a loan. It is the cash flow that counts for the monetary and budgetary impact.

Foreign currency aid used for imports of specific goods for projects has no effect on the economy apart from a supply-side effect (the project undertaken could enhance the productive capacity in the economy, at the same time that it reduces the availability of real resources such as labor for the rest of the economy). The aid cancels out against imports. Both foreign currency and imports are hence defined excluding imports for projects.

one and assumed to remain constant. There is therefore no exchange rate effect on the domestic currency denominated stock of foreign reserves. From equation (1) in combination with equation (4) it follows that foreign currency aid through its effect on the foreign reserves position has an expansionary effect on money supply unless it is sterilized. However, sterilization is automatic if the new counterpart funds, built up through the receipt of foreign currency aid, are not spent and credit to the private sector and to the government is not adjusted. (This implies in equation (1) that neither  $C_p$  nor  $C_g$  changes while the change in  $R$  is offset by the change in  $C_f$ , hence  $L$  is unchanged. There is no effect through  $X$  or  $M$  because the aid is not spent.)

A second indirect effect occurs because foreign aid in kind,  $F_k$ , influences money demand. 1/ The actual sale and resale of commodity aid will in general involve monetary transactions, thus influencing money demand. In equation (5)  $F_k$  therefore appears as a separate term besides the usual nominal output. Commodity aid generally consists of finished products, which require fewer monetary transactions. To reflect the possibility that the monetary transactions involved in the sale of foreign aid in kind are therefore less than those required for domestic output, a parameter  $a$  ( $0 \leq a \leq 1$ ) is included in equation (5). For  $a=0$  the standard case results. 2/ With respect to nominal output, a distinction is made between the production of domestically used goods  $q$ , with a price  $p$ , and the production of exported goods  $x$  with a price of  $p^*$  in foreign currency and  $ep^*$  in local currency.

Underlying the output is a convenient production structure of the following kind (Buiter 1988): there are  $k$  firms, each of which can produce both domestic and export goods with a concave technology,  $q = l(x) - bF_k/k.p - s/p$ , where  $l' < 0$  and  $l'' < 0$ .  $s$  is a random supply-side shock and  $bF_k$  reflects the supply side impact of commodity aid, which constitutes the third indirect effect of aid. 3/ An increase in either  $s$  or  $F_k$  will shift the production frontier inward. The supply-side effects can be substantial (Dudley and Sandilands 1975). The short run effect is most likely to be negative. After resources are reallocated, the supply-side effect may be less negative or positive in particular if the aid has led to an increase in production capacity. A special case is emergency aid, which is often

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1/ If the commodity aid is sold abroad for foreign currency it is in effect equivalent to foreign currency aid in the amount of the proceeds of the sale.

2/ Instead of just commodity aid imports, all imports could be assumed to effect money demand. This does not result in much additional insight.

3/ Foreign currency aid is assumed to effect the production frontier only with a lag. Together with the second and further period effects of commodity aid and a host of other elements, these effects are implicitly assumed to be embedded in the production frontier.

specifically designed to offset part of the supply-side shock (e.g. in case of food shortage).

All the  $k$  firms maximize revenue ( $w = p^* x + pq$ ), taking the prices as given, as they face no costs but their own free labor input. This production structure implies most conveniently that a change in economy-wide nominal output depends linearly on the change of prices,  $d(qp + p^*x) = q^-dp + xdp^* - bF_k - ds$ , where  $q^- = q - (bF_k/p^2)dp - (s/p^2)dp$ . This production structure also ensures that exports depend on relative prices:  $d(p^*x) = xdp^* + x'[(p^*/p)dp - dp^*]$ , where  $x' = -kl'/l < 0$ , and thus also leads directly to the export equation (6).

The import function contains the fourth and last major indirect effect of counterpart funds and foreign aid considered in this paper; foreign aid in kind can directly substitute for usual imports. This is most obviously the case when, for example, a freely provided shipment of rice replaces normally imported rice. In general, however, substitution is less than perfect, which is reflected in a parameter  $n$  ( $0 \leq n \leq 1$ ), in equation (7), as products are often donated that would otherwise not have been sold to the country. <sup>1/</sup> The other elements assumed to affect imports are first of all government expenditure, of which a proportion  $m_g$  is imported, and freely disposable income of which a fraction  $m_p$  is supposed to be imported. Disposable income is defined consistently with the other equations, notably the government budget constraint, the money supply process and the production structure. In view of these consistency requirements, it consists of the nominal revenue of production minus taxes paid to the government plus the change in net credit to the private sector minus the extra resources invested in holding money balances. Consuming a constant fraction  $m_p$  of disposable income is also consistent with a simple utility maximizing framework, in which consumers maximize a Cobb-Douglas utility function with domestic and imported goods as the two arguments.

### III. Solution

The model set out in the previous section can be solved for the two major endogenous variables, the change in price level and the stock of foreign reserves as a function of the exogenous variables, among which total credit adjusted for counterpart funds,  $C$  ( $C = C_p + C_g - C_f$ ), the exchange rate, government expenditure and the levels of foreign currency aid and commodity aid stand out.

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<sup>1/</sup> Commodity aid could even reduce inflows of foreign currency. For example, about 30 percent of U.S. PL480 aid is used for U.S. uses such as embassy expenditure.

$$dp = \{ [(1-m_p) dC + (m_p-m_g) dG + (1-m_p) dF_g + [n-m_p+(b-a)(1-m_p)v+bm_p] dF_k + \\ [(1-m_p)v+m_p] ds + [(1-m_p)(1-v)x-x'] dp^* + (1-m_p) dR_{-1}] / \\ \left\{ \bar{q} [(1-m_p)v+m_p] - x' \frac{p^*}{p} \right\} \quad (8)$$

$$dR = v\bar{q} \left\{ \left( \frac{x'}{v\bar{q}} \frac{p^*}{p} - \frac{m_p}{v} \right) dC + (m_p-m_g) dG + (1-m_p) dF_g + [n-m_p+(b-a) \frac{x'}{\bar{q}} \frac{p^*}{p} + am_p] dF_k + \right. \\ \left. \frac{x'}{\bar{q}} \frac{p^*}{p} ds + (x-x' - \frac{x'xp^*}{\bar{q}p}) dp^* + (1-m_p) dR_{-1} \right\} / \\ \left\{ \bar{q} [(1-m_p)v+m_p] - x' \frac{p^*}{p} \right\} \quad (9)$$

The most noteworthy aspect of this solution is that counterpart funds per se, have no clear independent role to play, which is evident from the fact that the factor Cf appears only contained within the factor C in equations (8) and (9). Credit to the private sector and credit to government corrected for counterpart funds is what matters. Accordingly any inflationary effect of counterpart funds can be offset directly by a change in net credit to the government or by a change in credit to the private sector of roughly similar magnitude (noting that  $m_p$  will be not very different from  $m_g$ ).

What about the aid flows that underlie the possible counterpart fund creation and spending? The inflationary impact of foreign currency aid can be offset directly and completely by a reduction of the same magnitude in credit to the economy adjusted for counterpart funds, C. This happens automatically if credit to the private sector remains unchanged and the government does not spend the aid or use it to reduce taxes, but lets counterpart funds accumulate ( $dC_f = dF_g = -dC$ ). If this is the case, equation (9) implies that the foreign currency aid feeds through completely into the foreign reserves position, R ( $dR = dF_g$ ). In other words this implies that foreign currency aid can be "stalled" in the form of reserves without affecting the economy. The situation is almost the same as if the aid had been kept in a foreign currency account abroad. This result can also be derived from the four definitory equations (1)-(4).

The inflationary impact of foreign currency aid, ceteris paribus a change in the policy instruments, comes about through a higher money supply caused by an improved foreign reserves position. Because the (marginal) propensity to import out of income is less than 1, the initial impact of the aid on foreign reserves is only partly offset by increased imports.

Whether aid in kind brings about inflation or not, ceteris paribus a change in the policy instruments, depends on the relative size of the various indirect effects caused by this type of aid. A high degree of

import substitution (high  $n$ ) is inflationary because of its stimulus to the money supply through increased foreign reserves. A sizable negative supply-side effect of foreign aid in kind (high  $b$ ) is also inflationary since it makes the same amount of money chase fewer goods. A higher money demand impact of aid in kind (higher  $a$ ) is, on the other hand, deflationary because it reduces the effective money supply available for the purchase of other products. The determination of which effects dominate is an empirical matter, depending in particular on the kind of aid given and the production structure of the country involved. When the various parameters  $n$ ,  $m_p$ ,  $v$ ,  $b$ , and  $a$  are known, it is easy to neutralize the inflationary impact of  $F_k$  by the appropriate credit policy (ceteris paribus the other exogenous and policy variables):

$$dC = - \frac{n-m_p + (b-a)(1-m_p)v + bm_p}{1-m_p} dF_k \quad (10)$$

However, unlike foreign currency aid, aid in kind cannot be "stalled". Therefore even though the inflationary impact is neutral if a rule like the one expressed in equation (10) is followed, the effect on the reserve position is non-zero. Once the aid in kind is sold it affects the economy. If one focuses only on the government budget constraint, notably in the form of equation (2'), one might be misled in believing that counterpart funds provide the government with an extra degree of freedom, and that because of counterpart funds, commodity aid can be "stored" and used for extra government expenditure in the future, without having an impact on the economy at the moment when the commodities are sold to the public. However, this impression is incorrect. The sale of the commodity aid has an immediate impact on the economy in the form of supply-side, import substitution, and money demand effects. And in any case, if the effect on government spending of the sale is offset by allowing the counterpart funds accumulate, it will effect the money supply. 1/

In the special case of emergency commodity aid, the aid is generally designed to offset part of the negative supply shock. If such aid is distributed and targeted in such a way that there are no supply side effects associated with the aid ( $b=0$ ) nor any import substitution effects ( $n=0$ ), it is clear that emergency aid will dampen the inflationary impact of the supply-side shock while it could limit the reserves outflow resulting from such a shock.

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1/ Unless  $n=1$ ,  $b=a=0$ , in which exceptional case commodity aid is equivalent to foreign currency aid.

#### IV. Policies in Case of Unexpected Shocks

An interesting issue in the context of the model developed in Section II is whether and how counterpart fund spending -- or more generally whether and how policy variables -- should be adjusted if the economy is hit by unexpected changes in the other exogenous variables. Without setting up an explicit utility or social welfare maximizing function, it is useful to examine here which policy rules are required to keep the major endogenous variables, inflation and foreign reserves, on the a priori preferred track. As a second step it is interesting to contrast these policy rules with a policy rule that the International Monetary Fund (IMF) sometimes stipulates in its programs. A third step is to devise policy rules that take account of the practical and other objections against both the contingency rules that keep the program on track and the IMF policy referred to above.

To keep inflation and foreign reserves on the a priori preferred track in the face of exogenous disturbances, it is necessary to use the two independent policy variables; credit to the economy and government expenditure. To keep inflation and foreign reserves on track requires:

$$\tilde{dC} = v[xdp^* + (a-b)\tilde{dF}_k - \tilde{ds}] \quad (11)$$

$$dG = - \frac{(1-m_p)\tilde{dF}_g + (n-m_p+bm_p)\tilde{dF}_k + m_p\tilde{ds} + [(1-m_p)x-x']\tilde{dp}^*}{(m_p-m_g)} \quad (12)$$

where a tilde over the variables indicates a deviation from the targeted level for a policy instrument and a deviation from the expected level for an exogenous variable.

From equation (11) it is clear that credit policy should not be affected under the stated goals by unexpected foreign currency aid, but only by unexpected changes in the price of export goods, aid in kind, and by supply-side shocks. This contrasts sharply with a clause that is sometimes found in IMF programs, which states that credit ceilings have to be reduced by the amount of unexpected foreign aid. As noted in Section III, such a policy rule leads to inflation-neutral results in the face of unexpected foreign currency aid and leads to an unexpected increase in the foreign reserves position with the amount of the unexpected currency aid. <sup>1/</sup> This outcome gives rise to various observations. The first is that the programs generally do not specify any contingency rules for the other exogenous

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<sup>1/</sup> In the accounting frameworks underlying the programs all counterpart funds are generally treated as government deposits in affect calculating a number for  $C_{gf}$ . According to the results in this paper, this is a correct procedure. It is the policy rules using the correctly derived numbers, which gives rise to several observations.

variables such as the terms of trade, which might vary unexpectedly. The second is that the criterion only works one way. Credit ceilings can be reduced but not lifted. A third remark is that in the case of commodity aid the program rule does not lead to inflation-neutral results but to

$$\bar{d}_p = \frac{n-1+(b-a)(1-m_p)+bvm_p}{q[(1-m_p)v+m_p]-x'\frac{ep^*}{p}} dF_k \quad (13)$$

The fourth and perhaps most fundamental remark is that the stipulated program rule need not be optimal. If the goal of the foreign currency aid is to increase domestic spending, then such aid has to be allowed to affect the price level, thereby driving out exports and stimulating production of the domestically used product  $q$  and/or it has to be allowed to result in higher imports. <sup>1/</sup>

For various reasons it is imaginable that complete contingency rules such as (11) and (12) are neither feasible nor desirable. First of all, they contain variables that are hard to measure, especially on a timely basis. Second, not all elements are entirely exogenous. For example, the supply-side shock,  $s$ , might actually be caused by a supply-side policy that falls short of stated objectives. Third, it is difficult to obtain exact measures for all parameters. Fourth, just keeping on the programmed track in the face of windfall gains or setbacks might not be optimal. A setback might lead one to prefer a slower path to a desired reserves position and inflation situation, whereas a windfall gain might have the opposite effect.

In the face of these objections, an alternative approach could be to specify maximum or minimum required levels for the target variables, such as the inflation rate and the reserves position, which allows the program country to decide how to allot windfall gains. This approach suffers from the problem that the price level is a rather unreliable variable to measure. A feasible middle of the road solution is to combine a minimum level for the reserves position, with a contingency rule for credit policy, noting that both the reserve position and the amount of credit are easily and expediently measurable. Instead of (11) and (12) one could have

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<sup>1/</sup> In as far aid is to be repaid this could be less desirable, in particular if there is little evidence of a contribution of the aid to the repayment capacity.

$$d\bar{C} \leq v[xdp^* + (a-b)dF_k - d\bar{s}] - d\bar{R} \quad (14)$$

$$R \geq R^* \quad (15)$$

where  $R^*$  is the minimum level. <sup>1/</sup> Because of exogeneity requirements one could omit  $s$  from condition (14). Program requirements (14) and (15) would result in a reserve position of at least the size required under the program and a level of inflation below the level stipulated in the program. In this way additional aid is allowed to affect real consumption, investment, and government service levels, the conditions are monitorable, and the specified rules will leave the choice of the instruments and freedom in the distribution of windfall gains to the government of the recipient country.

#### V. Real World Complications and Lessons for Donors

Various practical issues are sometimes seen to obscure the impact of counterpart funds. Most of these issues appear to be smoke screens that are easily lifted. A number of them -- such as selling donated commodities in the world market, receiving soft loans instead of grants, keeping counterpart funds at commercial banks rather than the Central Bank, and permitting ownership of the counterpart funds by different entities -- have already been dealt with in several footnotes. An important practical issue, which has not yet been discussed, is the following: the price at which aid in kind is credited to the local currency counterpart fund is sometimes higher than the actual price received by the government when selling or handing out the aid. The government generally picks up the bill for the difference. In India, which received up to US\$ 4 billion in aid from the United States under PL 480 in the period 1954-73, no more than 50 percent was recovered, according to Luttrell (1982).

What are the consequences of this real world complication? Budgetary resources for the government now only amount to a fraction  $h$  of the officially credited aid in kind. The effect on money supply (*ceteris paribus*), however, will remain the same as the counterpart funds are credited for the full face value. Assuming that the indirect effect of the commodity aid on money demand, import substitution, and production is reduced as well to a fraction  $h$  of the original impact, it is easy to see that the solution to the model (see equations (8) and (9)) stays the same except for the replacement of  $F_k$  by  $hF_k$ , whereas  $C_f$  (conform equation (3))

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<sup>1/</sup> Policy rule (14) closely resembles (11). The difference is that (14) allows for a non zero unexpected change in the reserve level. Note that (14) is a rewritten version of the money demand equation. It can be inferred from (14) and the way it is derived that it implies an inflation rate below the program target.



is calculated using  $F_k$ . Hence, the basic consequence of this complication is that when devising policy rules, and calculating the budgetary impact and the like, one should take the real revenue of the foreign aid in kind as a starting point, but when determining the composition of the desired  $C$ , one should use  $C_f$  as credited, i.e., at the official price.

A second real world complication arises if the counterpart of the aid in kind is credited to the counterpart fund before the actual sale takes place. Again, when the model is solved taking this difference into account, it becomes clear that here too, the solution (equations (8) and (9)) stays the same except for the fact that one replaces  $F_k$  by the revenue actually received, and when determining the composition of the desired  $C$ , one should use  $C_f$  as credited, i.e., as officially received. The intuition is that crediting commodity aid to a counterpart fund is only a bookkeeping action within the government sphere, which can be offset by another bookkeeping action by the government (more credit to the government, thus leaving  $C_{gf}$  unchanged), while all the real effects ensue from the actual sale of the commodities.

Another practical question that keeps the minds busy is whether counterpart funds constitute "real resources" (Roemer 1989). Before answering that question it should be emphasized that for the economy under consideration there are two ways of saving--one is investing and the other is accumulating (net) foreign reserves. When foreign aid results directly or indirectly in increased savings, it enlarges the stock of real resources. Accordingly when past foreign aid resulted in higher savings and at the same time in a monetary or bookkeeping counterpart, one might say that the counterpart fund constitutes a title to real resources, somewhat akin to a title to some investment in the country or some of the foreign reserves of the country. Generally, however, the question whether counterpart funds constitute "real resources" is raised with a specific purpose in mind. Can the counterpart funds be used to further certain development objectives by accessing a new source of resources? Then the answer is no, not unless one considers reducing either the (net) foreign reserves position or implicitly using part of the capital stock as accessing a new resource. As observed earlier in this paper and already noted by McLeod in 1950, it is aid that adds to the real resources of a country, and counterpart funds are "simply the reflection of real resources already received and integrated in the economy". <sup>1/</sup>

A different but related question is, of course, whether counterpart funds provide any leverage to change the composition of the government's ongoing expenditure or other policy variables in order to achieve certain

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<sup>1/</sup> Roemer (1989) restates this conclusion, which is echoed by Bruton and Hill (1991) and Maxwell (1991) as the consensus view. Note however the subtle situation in which there are excess foreign reserves. Counterpart funds can then be perceived as a title to these resources, which may be used to further development.

development objectives. Although, as noted in Section III, counterpart funds can in some cases be perceived as a title to real resources, the answer is in principle no. The reason is that counterpart funds, if their function is well understood, do not do any harm. Credit to the government can be adjusted to neutralize their impact. Only if the impact of counterpart funds is not well understood and the parties involved e.g. consider counterpart fund use to be a genuine non-borrowing source of revenue without monetary effects can it make a difference. 1/ What does matter for the country is foreign aid, which can be a real resource of increased consumption and investment. For example when the policy rules (11) and (12) are adhered to, absorption,  $A$ , increases with the amount of foreign aid adjusted for the direct productivity effects of commodity aid:

$$d\tilde{A} = -d\tilde{s} + (1-b)d\tilde{F}_k + d\tilde{F}_g + ((1-m_p)x-x')d\tilde{p}^* \quad (16)$$

Hence it is not the counterpart funds, but the future, non-distributed or non-disbursed, aid that implies leverage for the donors. 2/ As was shown above, aid in kind cannot be "stalled" and has a budgetary and/or monetary impact as soon as it is sold. Therefore if donors want to achieve objectives such as an increase in government expenditure (in other words, to use counterpart funds for extra expenditure) by providing aid in kind, they have to achieve these objectives more or less at the moment the aid in kind is sold or distributed to the private sector. A complication here is that as soon as the aid is distributed it loses its "carrot" appeal. Taking into account the generally cumbersome budgetary procedures in the recipient country as well, it is therefore obvious that tied aid should be a long-term, regular and well-planned process, so that the "carrot" appeal of the next shipment can be used to influence the spending of the proceeds of the current shipment. The same conclusions follow if one focuses on the negative supply-side effects of aid. To minimize these effects, regular, well-planned aid is also required. In the absence of such a process, aid in kind ought to be untied.

## VI. Conclusion

Counterpart funds generated through foreign currency or commodity aid have become an issue of interest again, given the substantial buildup of these funds, notably in Africa. This paper shows that counterpart funds need not have any economic impact if their creation, use, and effects are adequately monitored and understood. The solution of the small model set

1/ Of course if counterpart funds can be used for otherwise undertaken expenditure such as paying for embassy procurement or tourism of foreign nationals real effects may occur as well.

2/ Bruton and Hill (1991) clearly see this point. Maxwell (1991), however, ties conditionality to counterpart funds instead of future aid and proclaims it misguidedly as the consensus view.

out in the paper shows in particular that it is credit to the government adjusted for counterpart funds that is relevant for inflation and the foreign reserves position and other important aspects of the economy. In other words, counterpart funds have no independent role to play and hence do not give a government any extra degree of freedom or room to maneuver, which implies that, if the role of such funds is well understood, they need not do any harm nor provide any donor leverage. Nevertheless, it may be desirable to eliminate counterpart funds to simplify administrative procedures and avoid misunderstanding; they could be used to pay off government debt to the Central Bank, implying a consolidation of credit to the government.

The aid which underlies the counterpart fund creation does have real effects. The effects of foreign currency aid on the economy, however, can be delayed, as the aid can effectively be "stalled", just as if it is held in a foreign account. Commodity aid on the other hand can not be "stalled" once it is sold or handed out in the recipient country. If donors want the proceeds of commodity aid to be spent on earmarked targets not included in the standard government budget, such proceeds must affect government spending when the commodities are sold, and not later. This requires a regular, well-planned process because it is future aid that provides the leverage to ensure that recipient governments spend the current counterpart on goals desired by the donors. Accordingly, it is in particular irregular, non-fungible, tied commodity aid that poses a problem, in the sense that it might lead to an irregular budget deficit and thereby to irregular taxation of c.q. credit to the private sector (not just irregular or tied aid or foreign currency aid).

Various practical issues sometimes seem to obscure the impact of counterpart funds and thereby create inflationary and other harmful effects. A number of these complications -- such as selling donated commodities in the world market, receiving soft loans instead of grants, keeping counterpart funds at commercial banks rather than the Central Bank, permitting ownership of the counterpart funds by different entities, and crediting the counterpart fund for a higher amount than the actual proceeds of commodity sales -- are discussed. They appear to be smoke screens that are easily lifted.

The model developed in the paper also yields some conclusions regarding unexpected aid. Reducing credit ceilings by the amount of unexpected aid, a requirement sometimes included in IMF programs, is found to be suboptimal. A different set of contingency rules or program requirements is derived, which allows some freedom in the use of unexpected aid by the recipient country if other circumstances permit it, and makes it more enticing for donors to give additional aid. This set of rules also ensures that unexpected commodity aid and unexpected foreign exchange aid are effectively treated in a more similar way.

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