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**THE MACROECONOMICS OF COUNTERPART
FUNDS**

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ABSTRACT*

Use of aid-generated counterpart funds has become an important issue again, especially in Africa. This paper explains why the monetary impact of counterpart funds is not inherently inflationary. However, when the import of aid-funded commodities, and the monetary balance-of-payments impact, is incorporated into the analysis, then the expenditure of counterpart funds has a strong tendency to cause inflation, even though the monetary authorities counteract any increases in the money supply. But if aid-funded commodities permit output to grow, then the joint effect of additional imports and counterpart outlays can be deflationary. Further, the drawdown of counterpart accounts does not reduce government deficits, but merely finances them. Donors and recipient governments need to recognize that counterpart accounts do not represent real resources and have extremely limited use in development financing. The paper is written in non-technical language with a technical appendix supporting its arguments.

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1. Introduction¹

Counterpart funds are generated in developing countries when aid-financed commodities are sold to the public and the proceeds deposited in accounts that are usually owned by the recipient government. Such accounts are later used to finance development projects that have been agreed between the aid donor and the host government.

Counterpart funds were an important element of United States Marshall Plan aid to Europe after World War II, and again in India, where grains and fibers supplied by the U.S. under Public Law (P.L.) 480 generated over \$6 billion of counterpart funds from the late 1950s until 1980 (Luttrell, 1982). The supply of grains to Africa in the past few drought-stricken years has revived interest in counterpart funds and their impact on recipient economies. Several donors now supply commodities to African nations -- from foodgrains to intermediate goods to general imports -- and expect the resulting counterpart deposits to fund specified development projects, though methods differ among donors. Amounts can be significant. The government of Kenya, for example, generated \$93 million of counterpart funds during its 1987 fiscal year, equivalent to 18 percent of that year's budget deficit and to 4 percent of Kenya's money supply.

The generation and use of counterpart funds raises several issues. First, do they create money and therefore cause an increase in inflation? Second, what is their net effect on inflation when the deflationary impact of aid-financed imports is considered? Third, when counterpart funds are spent on development projects, do they represent an addition of real resources to the economy? Fourth, how do they affect government's budget and how should they be treated in the budget? Finally, once these issues are understood, how should donors and recipient governments manage counterpart funds?

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During the days of the Marshal Plan and the large commodity aid programs to India, these issues were debated actively among economists, aid officials, and recipient government officials. Some of these issues were settled in the 1960's. But the published literature is rather sparse (see bibliography) and not readily accessible to practicing economists in either the donor agencies or the recipient governments. Nor did the literature deal comprehensively with the inflation issue. The growing importance of counterpart funds in Africa suggests the need for a renewed understanding of their impact by working economists and government officials.

My aims are to provide an explanation of the impact of counterpart funds that is as simple as permitted by an inherently complex subject; and to push the discussion beyond previously published articles by analyzing the combined effects on prices of the initial deflationary sales of aid-financed commodities and the subsequent inflationary expenditure of counterpart funds. The paper is divided into sections on the monetary impact of counterpart funds; the inflationary and balance-of-payments effects of initial commodity sales and subsequent counterpart expenditures; the budgetary implications of counterpart funds; and the lessons for donors and recipient governments. It is written in non-technical language, with supporting arguments contained in a technical appendix.

2. Money Creation through Counterpart Funds

The most intensely debated issue about counterpart funds has been whether they create money. The question is important because some recipient countries have accumulated large balances of counterpart funds, which donor agencies often press them to spend. If expenditure of these balances creates additional money, it can also increase inflation in the absence of counteracting policies by the central bank. The classic example is India, which imported over \$6 billion of wheat, cotton and other commodities from the United States under P.L. 480 from 1954 to 1980. In 1967, India added to its counterpart accounts an amount equal to 6 percent of the stock of money (Luttrell, 1982).

Indian and American economists had little difficulty agreeing that counterpart balances need not have been inflationary, because there is nothing inherent in the generation and expenditure of counterpart funds that adds to the money supply (Khatkhate, 1963; Srivastava, 1969; Luttrell, 1982). To see why, let us trace through the elements of a simple commodity aid transaction.

An aid donor provides commodity assistance to a recipient in the form of foodgrains, other consumer goods, industrial or agricultural inputs. The goods enter the recipient country and are sold to private dealers, consumers, industrialists, or farmers, who pay in domestic currency by cash or by check from their bank accounts. The proceeds are deposited to an account owned either by the donor or, more commonly today, by the recipient government. These are called "counterpart" funds because they are the local currency reflection or complement of the donor's supply of commodities, purchased originally by the donor with foreign currency. Counterpart funds are subsequently spent, normally (but not only) on development projects under agreement between the donor and recipient governments.

How do these transactions affect the money supply? Money is defined to consist of (a) cash in the hands of and (b) bank deposits owned by the non-bank public. Deposits owned by government are not considered part of the money supply, because government's spending decisions, unlike those of the public, are not generally constrained by the size of its bank balances. Counterpart accounts are owned by government and also under restriction, because agreement between donor and recipient is required before they can be spent. For both reasons, counterpart deposits are not considered part of the money supply (IMF Institute, 1981). Hence the payment to government for commodities purchased by private importers reduces the money supply: private currency holdings or deposits fall, while government holdings rise, by the amount of revenue from sales of aid-funded commodities.²

² This discussion ignores the secondary effects of changes in commercial banks' reserves, which would exacerbate the observed shifts in the money supply.

Some time -- often years -- later, government will spend its counterpart accounts on local currency components of development projects. At that time, local private contractors, suppliers and others will receive payments for goods or services rendered to the government. These payments will increase the public's bank deposits or cash holdings, and so increase the money supply. It is this transaction that has been seen as inflationary. But it merely cancels the initial decrease in money when aid-funded commodities are originally purchased by private importers. Over the entire span, from importation of the commodities to the expenditure of counterpart, no money has been created and hence counterpart cannot create inflation.

However, there are some real-world flaws in this idealized story that can change its conclusion. First, it has been assumed implicitly that the local currency value of commodity sales is equal to the value of the counterpart accounts. It might not be. India, for example, sold wheat to consumers for less than the price placed on P.L.480 imports by the U.S. government, yet counterpart funds were credited at the full rupee value of the imports (Luttrell, 1982). If all counterpart funds are later spent, additional money is generated to the extent of the original subsidy.

Second, there is often a long hiatus between commodity import and counterpart expenditure, typically a year, sometimes several years. During the interim, the initial decline in the money supply due to government's sales of commodities is frequently cancelled out. Monetary authorities, always under pressure to increase domestic credit, tend to permit the money supply to grow at least at target rates.³ Indeed, sound monetary management suggests that the central bank should compensate for the initial decrease in the money supply. Otherwise there would be an unwanted credit squeeze during the long interim between commodity sales and counterpart expenditure. Even this would not be inflationary if, when the government

³ The money supply is related to the amount of credit (loans) offered by the commercial banks to the public. If the public can borrow more, it can hold more cash and deposits (as well as more goods). A financial accounting rule is that the total of cash plus deposits in the economy must equal the commercial and central banks' holdings of foreign reserves plus their loans to government and the public.

spends its counterpart, the central bank again compensates, this time by forcing commercial banks to reduce credit to the public.⁴ However, if it does not reduce private credit when counterpart funds are disbursed, the money supply rises (counterpart funds have been "monetized") and the expenditure of counterpart becomes inflationary.⁵

In some countries, such as Kenya, counterpart accounts, though restricted in use, are considered part of government's deposits which can be drawn down to finance budget deficits. Such drawdowns, which transfer deposits from government to private accounts, compensate for the initial decline in the money supply after commodities have been sold. Later, when counterpart accounts are finally spent, the money supply is increased, but government's capacity to finance deficits is decreased. If this actually reduces deficit financing, a highly doubtful proposition, it would compensate for the net increase in the money supply.

Although this discussion has been conducted in terms of inflows and outflows of counterpart funds, it ought to be couched in terms of the changes in stocks of counterpart accounts. Monetary implications arise when the level of counterpart accounts rises or falls, because an inflow is not matched by an outflow, or vice versa. If, however, stocks remain unchanged because an inflow of counterpart from commodity sales in 1988 is matched by an expenditure of counterpart from commodity sales in, say, 1986, one neutralizes the other, even though they arise from different aid transactions. In Kenya during fiscal 1987, for example, \$93 million of newly generated counterpart was almost exactly matched by the expenditure of counterpart

⁴ The central bank can reduce private credit and the money supply by requiring domestic banks to hold more cash (or central bank deposits) in proportion to the deposits they hold for the public; by raising the cost to the banks of borrowing from the central bank to cover any shortfalls in their required cash holdings; and by selling government securities to the commercial banks or the public, which transfers cash or deposits to the central bank.

⁵ Frequently, aid-funded commodities are offered to importers through normal commercial channels. If these commodities do not move well, perhaps because various restrictive conditions make them less attractive to importers, then the central bank may help commercial banks to provide more or easier credit to importers. This could compound the monetary impact.

funds, leaving counterpart balances virtually unchanged and thus having a negligible effect on the money supply.

Several counterpart transactions are worked out in the technical appendix using simplified balance sheets (T-accounts) for the banking system. They demonstrate what has been stated in this section. The transactions that generate and spend counterpart funds are not inherently money-creating. But actions by the monetary authorities to compensate for the reduction in money supply between the generation and expenditure of counterpart can create money and become inflationary.

3. Commodity Sales, the Balance of Payments and Inflation

The literature on counterpart funds, which relates largely to United States P.L. 480 assistance, deals separately with the effects of imported commodities and the generation of counterpart funds. Discussions about the commodities themselves generally focus on their costs to the United States and their adverse effects on farmers in the recipient countries (Schultz, 1960; Olson, 1960; Khatkhate, 1962). The issue of economy-wide price inflation is generally discussed in terms of counterpart funds alone. Yet counterpart arises only because commodities are imported, and the commodities themselves also have an impact on inflation. If more of certain goods become available without any increase in the money supply, not only will the prices of those particular goods fall, but so will the prices of other goods; hence the average price level must fall.

The combined macroeconomic effects of commodity imports and counterpart funds has evidently not been analyzed in the literature. As demonstrated in the technical appendix (Sections A.2 and A.3), much depends upon the alternative ways an economy might adjust to the changes in import levels caused by commodity aid. The two alternatives that are considered may be labelled (a) the monetarist model and (b) the growth model.

(a) The monetarist model

The International Monetary Fund employs a macroeconomic model that profoundly influences its analysis of developing countries (IMF 1977). The IMF's approach centers on the creation of money and its influence on inflation and the balance of payments. It is assumed that over the short run, which may last a year or two, output cannot change much. Hence any increase in the money supply will feed into higher prices or more imports, because it cannot stimulate more production. The money supply -- cash in circulation plus bank deposits of the public -- cannot exceed the total of two assets of the banking system: net foreign reserves plus net domestic credit.⁶ Imports are assumed to depend on private demand: there are no import controls and any rise in domestic prices or in real incomes leads to greater demand for imports. Finally, the price level is determined by both the supply of money and the quantity of goods available: increases in the money supply raise prices, while increases in the supply of goods lower prices.

In this IMF world, commodity aid and counterpart funds together have three separate effects on prices. First, commodity aid brings more goods into the economy, which tends to lower prices. Second, the aid will, to the extent that its commodities substitute for "normal" imports, reduce the level of imports not funded by aid. This in turn increases net foreign reserves because less foreign exchange need be spent to satisfy the demand for imports. Higher reserves increase the money supply and thus cause higher prices.⁷ The third effect is that counterpart funds may be used to increase the money supply. As discussed in the previous section, this third effect depends entirely on the actions of the central bank.

The appendix describes a simple model of an economy, constructed to reflect the IMF conditions, and reports a series of model simulations employing alternative assumptions.

⁶ Net domestic credit consists of the banking system's total loans to the non-bank public plus its loans to the government, net of government's deposits with the banking system.

⁷ It is assumed throughout that the central bank acts to prevent aid-financed commodities from affecting the exchange rate, which remains fixed in nominal terms.

Whatever the combination of assumptions, and contrary to expectations, in this model commodity aid has a strong tendency to be inflationary. This inflationary tendency is caused by the interaction among aid commodities, the growth of reserves, and domestic credit creation.

If aid commodities substitute for normal imports, less is imported and the balance of payments improves, which increases foreign reserves. This leads to money creation. As commercial banks collect more foreign exchange from exporters than they pay out to importers, they accumulate foreign reserves. When these are turned over to the central bank, commercial banks are credited with additional local currency deposits against which they can expand their loans to the public. If, on the other hand, aid commodities are fully additional to normal imports, there is little or no increase in foreign reserves. The deflationary impact of more goods will then prevail, unless the central bank acts to create additional domestic credit (i.e., to increase the money supply). Prices can be kept from rising only if aid commodities are truly additional to normal imports and if the central bank ensures that counterpart funds do not create additional money.

(b) The growth model

In the very short run, and with tight bottlenecks that prevent increases in production even with more imports, the monetarist model might describe some developing countries. But two adjustments to that model probably come closer to the real world. First, many countries, especially in Africa where commodity aid is now important, have suffered from a chronic shortage of foreign exchange that has severely reduced the flow of imports over a number of years. In these circumstances, more imported inputs are likely to permit increased production in industry and perhaps in agriculture as well. More consumer goods imports could also help raise output through the incentive effect on farmers and workers (Bertholemy and Morrisson, 1987). Such increases in output would exert a deflationary influence on the economy in the absence of other changes.

Second, also because of foreign exchange shortages, many countries control imports, so that policy decisions rather than private demand determine the level of imports. If controls are effective, imports will be allowed only to the extent that foreign exchange earnings, including export revenues, foreign aid and other net capital inflows, will just pay for them. In this control regime, shifts in import demand are not permitted to cause changes in reserves. Thus the money-creating impact of reserve accumulation, which so influences the inflationary outcome of the monetarist model, is absent.

When these two features are incorporated in the model, as described in appendix section A.5, the picture changes dramatically. If domestic production responds in proportion to the increase in imports due to commodity aid, and if counterpart expenditure is not allowed to increase the money supply, a strong deflationary tendency exists for as long as the aid flow continues. If counterpart expenditures are permitted to create money, there is at first a sharp deflationary tendency, followed by a rise in prices that can eventually surpass the initial declines. The situation is more inflationary if output responses are less than proportional to increases in imports, because the deflationary pressure of more goods is muted.

The monetarist and growth models permit us to consider the economic impact of commodity aid from start to finish, from commodity import through the eventual expenditure of counterpart funds. Two general lessons can be derived from the simulations. First, if output is unlikely to grow much (the monetarist world), then commodity aid has inflationary tendencies. To prevent inflation, credit policy may have to be even more restrictive than would be demanded simply by the need to prevent counterpart funds from raising the money supply. Second, if production responses to higher imports are likely to be substantial, inflation is not a problem so long as counterpart expenditures are not monetized. But if counterpart outlays do raise the money supply, inflation becomes a real danger. Central bank policy is crucial.

4. Counterpart Funds in the Government Budget

Many aid agencies view counterpart funds as a means of influencing the budgetary allocations of the recipient governments. They see local currency accounts as tantamount to a real resource that can increase development expenditures, and they want it spent in ways consistent with the strategies of their aid programs. Host government officials resist this: early calls from Indian officials to spend counterpart accounts on projects of their own choosing (Sen, 1960) are echoed today by African treasury and planning officials who want counterpart funds thrown into the pot of general resources that finance the entire budget, with no strings attached.

Two issues in this debate are clear. First, counterpart funds are not additional real resources to the economy. An old truth of international economics is that any capital flow, including aid flows, results in a transfer of real resources to the receiving country only when it is matched by a net flow of goods or services into the recipient economy. This real resource transfer can take the form of more imports, less exports (so that more of the country's own production is available for consumption at home), or some of both.

In the case of commodity aid, the real resource transfer comes directly in the form of commodities, such as grains or intermediate goods for industry. Those goods increase consumption, production or, through indirect means, investment, and provide the real benefit to the economy. The financial flow is a paper transaction, a bookkeeper's entry to balance the accounts and, in the case of loan-financed commodities, to establish a basis for repayment.

If the addition of real resources takes place when aid-funded commodities are provided, it cannot also take place when counterpart funds are spent. Counterpart accounts represent potential money, nothing more.⁸ If government chooses to spend them, their impact on the

⁸ This seems an obvious point, but not all donors act as if they understand it. In one African country recently, a donor's contribution of fertilizer was sold to generate counterpart funds. The donor then asked the host government to use its counterpart to purchase additional commodities from the donor country!

economy depends entirely on how the central bank accommodates this expenditure through credit policy, as the previous two sections demonstrate. In this respect expenditures financed by counterpart are no different from government deficit spending. If deficit-increasing outlays are financed through the creation of money,⁹ they are inflationary in the ways described in the first section. However, such expenditures can be neutralized if the central bank accommodates them by inducing or forcing reductions in credit to the private sector. Then there is no inflationary impact, but there is a shift in the allocation of resources. The private sector gives up some credit, and thus some investment or consumption, in favor of government's additional outlays.

This is the second clear point about the counterpart dispute. If monetary policy has been both accommodating and responsible, the central bank will have countered the initial fall in the money supply, when commodities are purchased by the private sector, with an offsetting increase in private credit. But when counterpart funds are finally spent, perhaps a year or more later, the monetary authorities must then reduce private sector credit to prevent inflationary increases in the money supply. Then the expenditure of counterpart accounts effects, not any real increase in resources to the economy, but a reallocation of resources from the private sector to government. This is a rather ironic conclusion for donors, especially The United States Agency for International Development (U.S.A.I.D.), who push both commodity aid and the privatization of the economy.

There is an alternative outcome. Government may wish to avoid increasing its deficit or spending counterpart funds beyond its planned level of expenditure, for a number of reasons. It may want to avoid putting pressure on the central bank and risking the danger of an infla-

⁹ This can happen if government sells treasury bills to the central bank or to commercial banks who pay for the bonds out of their excess cash reserves. Then, when government spends the proceeds the public ends up with more cash or deposits. If, instead, government sells treasury bills to the public, or to commercial banks who do not have excess cash reserves, their purchase of treasury bills cancels out the eventual expenditure by government, so no money is created.

tionary monetary policy. It may itself be concerned about private sector activity and credit, so not wish to reallocate resources from private to government uses. Or it may simply be working under an IMF standby agreement whose budgetary and monetary targets would be violated by such outlays.

For any of these reasons, government may spend counterpart funds on projects agreed with the donors, but would then reduce other planned expenditures to avoid increasing total outlays. This may well be the outcome desired by some donors. Resources are transferred from uses they deem less essential into projects they favor. This also explains the resistance of host governments to programming counterpart funds in collaboration with donors. Indian planners long ago argued that, unless the uses of "counterpart funds [are] fitted into the overall programmes for economic development ... in a general way, ... serious difficulties are likely to follow." (Sen, 1960) African officials make the same argument today.¹⁰

So much is clear. Counterpart funds are not an addition of real resources. Their impact on the macroeconomy is a monetary, not a budgetary issue. But their use can have allocational impacts, either between the public and private sectors or within the public sector. A last question is not so easily answered: how should counterpart outlays be treated in the budget?

The choices are two. Counterpart accounts can be considered as government revenue when disbursed, so that additional outlays financed that way do not increase the deficit. If used against planned general expenditures and treated as revenue, counterpart would have the accounting impact of a reduction in the deficit. Alternatively, they can be treated as a source of finance for the deficit, that is, taken "below the line." In this treatment, additional counterpart-funded expenditures do increase the deficit, while the drawdown of counterpart

¹⁰ In recent years, USAID has been earmarking counterpart funds for private sector credit programs. In this case, the reallocation of resources takes place entirely within the private sector.

accounts directly finances that increase in the deficit. The application of counterpart to already planned expenditures has no effect on the deficit.

The latter treatment -- counterpart as a source of deficit finance -- is more consistent with all the possible uses of counterpart funds. Whether counterpart expenditures create money or not is a matter for central bank action, which is also true of all deficit finance and is not true of real revenue items. Tax revenues can always be spent with no inflationary implications. The inflationary impact of deficit financing through government bonds or other paper depends entirely upon who buys this paper: the banks out of excess reserves (inflationary -- see footnote 6); or the banks who do not have excess reserves and the rest of the public (not inflationary).

This distinction between treating counterpart funding as a source of revenue or as deficit finance hinges largely on a matter of timing. Tax revenues constitute a flow of purchasing power from the private sector to government, and they are almost always spent very soon after they are received. Counterpart accounts, however, are a stock of funds, resulting from past flows of revenue from the sale of aid-financed commodities. Their expenditure is usually delayed by months or years after they are received. It is this delay that creates the possible monetary impact and suggests that counterpart funding is a deficit financing item. Thus counterpart accounts are treated as any other government financial balance whose drawdown is considered as deficit financing. If counterpart funds were received and spent almost simultaneously, as are tax revenues, they could be treated as current revenues.¹¹

Finally, the intra-budgetary transfer of resources from general expenditures into projects agreed with donors also suggests treatment of counterpart as deficit financing. Total expenditures have not changed, if the counterpart spent on agreed projects is considered to be additional revenue, it would reduce the measured deficit. The criterion for a measured deficit

¹¹ If counterpart outlays are restricted to balance the flow of counterpart generation in any year, so that balances remain the same, the treatment of counterpart funds as revenue would be consistent with these principles.

reduction is that the money supply is thereby reduced or that credit is consequently shifted from government to private use. But when counterpart balances are spent, a money supply reduction depends upon independent central bank action to decrease private credit, a monetary and not a budgetary phenomenon. And no government-to-private resource transfer can occur if government is spending the same as it planned before the use of counterpart, while revenues paid by the public to government have not changed.

The treatment of counterpart as a deficit-financing item, not as revenue, is consistent with all these considerations.

5. The Lessons for Donors and Recipients

As this paper demonstrates, there is an irreducible level of complexity to the understanding of counterpart funds. Yet the first step towards improved management of counterpart accounts is a better understanding of these issues, by both donors and recipient governments. This section summarizes the lessons for both parties, stripping away some of the caveats in the name of clarity.

Otherwise sensible donor agencies sometimes act as if counterpart deposits represented real resources to the recipient government, and press for their expenditure on projects not already in the budget. The potential inflationary impact of such outlays is frequently not acknowledged, or not considered important. Donors would better serve the interests of macro-economic stabilization and of development by permitting counterpart funds to be spent soon after they are generated, and to be used for any expenditures in the existing budget. This would make monetary management simpler by eliminating the long delays between the money-reducing sales of commodities and the money-increasing expenditures by government, so that the central bank need not intervene at all.

In the Gambia, donors have moved substantially in this direction. In countries like Kenya, where counterpart accounts immediately become part of the deposit base from which

deficits can be financed, this condition of non-inflationary use would also be fulfilled, but only if government were not subsequently forced to reduce its counterpart balances. Should recipients match the expenditure of funds generated in past years against the generation of counterpart funds in the current year, so that balances remain constant, this would also prevent money creation.

If, however, donors must target counterpart outlays to specific projects not already in the budget, they need to acknowledge the real issue: to avoid inflationary spending, government will have to forego some expenditures that are included in the budget; or else the monetary authority will have to take countervailing actions that will transfer resources from the private sector to government. The policy dialogue with recipient governments should be conducted on these lines, and the likely conflict with other policy goals, such as privatization of the economy, ought to be recognized.

Recipient governments need to coordinate their own handling of counterpart accounts among the main participants: the monetary, budgeting, and foreign aid authorities (often combined in or coordinated by the treasury) and the spending ministries. The main lesson from sections 2 and 3 is the centrality of monetary management. Central bank officials have to be alerted by the treasury (and, if separate, the foreign aid authorities) to the likely timing and magnitude of the generation and expenditure of counterpart funds, so the bank can operate an accommodating, non-inflationary monetary policy. The difficulty of doing so will depend upon the willingness of aid donors to simplify the process of spending counterpart funds and to allow their flexible use against all budgetary items.

Treasury needs to manage its budget so that counterpart expenditures are treated as deficit financing, and are not permitted to raise expenditures in inflationary ways. Treasury's greatest task will be to explain the economics of counterpart funds to the spending ministries, who clamor to use these accounts to finance new projects. A responsible treasury will allow such counterpart expenditure only if other planned expenditures are curtailed by an equivalent

amount. The budgetary management of counterpart expenditures is no different from the management of any competing expenditure against fixed revenues, and that is the main budgetary lesson of this paper. The problem is that treasuries always have difficulty convincing spending ministries that budgets really do constrain their activities, that choices have to be made among competing projects. This has been made even tougher by the myth, common among donors and recipients, that counterpart funds are really additional resources to the country. It would be a contribution merely to help dispel that myth.

TECHNICAL APPENDIX

A.1 Money Creation

Counterpart funds create money only if they increase private deposits with the banking system. There is nothing inherent in the process to yield this result. To see why, consider a T-account analysis of the banking system under four different treatments of a commodity loan that generates local currency of 100.

Case 1: Aid donor supplies commodities that are fully additional to normal imports and these are sold by government to private dealers.

Transactions:

1. Goods sold by government to dealers who pay by check against commercial bank deposits.
2. Government spends counterpart funds on development projects agreed with donor, with proceeds going to private contractors.

Central Bank

<u>Assets</u>	<u>Liabilities</u>
	1. Government deposits +100
	Commercial bank deposits -100
	2. Government deposits -100
	Commercial bank deposits +100

Commercial Banks

<u>Assets</u>	<u>Liabilities</u>
1. Deposits @ central bank -100	1. Private deposits -100
2. Deposits @ central bank +100	2. Private deposits +100

Summary for banking system: Transaction 1 reduces the money supply because deposits are transferred from private dealers to the government, whose deposits are not part of the money supply. This is reversed in transaction 2 when government spends the counterpart; the net result is no creation of money.

Case 2: The donor supplies goods for government projects that would otherwise have been purchased commercially with the country's own foreign exchange.

Transactions:

1. Aid-financed goods replace normal imports, so reserves accumulate and are credited to government's counterpart deposits with the central bank.
2. Government spends counterpart funds on development projects agreed with donor, with proceeds going to private contractors.
3. [Optional: the central bank sells foreign exchange to private importers.]

Central Bank

<u>Assets</u>		<u>Liabilities</u>	
1. Net foreign assets	+100	1. Government deposits	+100
		2. Government deposits	-100
		Commercial bank deposits	+100
[3. Net foreign assets	-100	3. Commercial bank deposits	-100]

Commercial Banks

<u>Assets</u>		<u>Liabilities</u>	
2. Deposits @ central bank	+100	2. Private deposits	+100
[3. Deposits @ central bank	-100	3. Private deposits	-100]

Summary for banking system: Transaction 1 creates no money because the increase in reserves is credited to government, whose deposit with the central bank is not part of the money supply. Transaction 2 increases the money supply because deposits are transferred from government to private dealers. The central bank may elect to reverse transaction 2 by selling foreign exchange to private importers, thus increasing imports and effecting the real transfer of the aid.

Case 3: Same as Case 2, except banks use excess liquidity to provide credit to private sector to finance transactions.

Transactions:

1. Goods sold by government to dealers, who borrow from commercial banks to pay.
2. Government spends counterpart funds on development projects agreed with donor, with proceeds going to private contractors.

Central Bank

<u>Assets</u>		<u>Liabilities</u>	
		1. Government deposits	+100
		Commercial bank deposits	-100
		2. Government deposits	-100
		Commercial bank deposits	+100

Commercial Banks

Assets		Liabilities	
1. Private credit	+100		
Deposits @ central bank	-100		
2. Deposits @ central bank	+100	2. Private deposits	+100

Summary for banking system: The expenditure of counterpart accounts creates money, but only because the initial decrease in the money supply caused by private payments to government was neutralized by the commercial banks' ability to create additional credit to fund the purchase.

Case 4: Aid-financed commodities are imported by government and sold to private dealers, who do not obtain credit. Expenditure of counterpart is delayed for a year or more, during which time the central bank adjusts the money supply to its previous level.

Transactions:

1. Commodities sold to dealers who pay from existing deposits.
2. Central bank adjusts money supply by purchasing treasury bills from commercial banks, whose cash reserves are fully extended to back their loans.
3. Commercial banks use additional liquidity to expand credit to private borrowers.
4. Some time later, government spends the counterpart funds, the proceeds going to private contractors.

Central Bank			
Assets		Liabilities	
		1. Government deposits	+100
		Commercial bank deposits	-100
2. Treasury bills	+100	2. Commercial bank deposits	+100
...		...	
		4. Government deposits	-100
		Commercial bank deposits	+100

Commercial Banks			
Assets		Liabilities	
1. Deposits @ central bank	-100	1. Private deposits	-100
2. Treasury bills	-100		
Deposits @ central bank	+100		
3. Private credit	+100	3. Private deposits	+100
4. Deposits @ central bank	+100	4. Private deposits	+100

Summary for banking system: Money is created as private deposits with commercial banks rise by 100, matched by an increase in commercial banks' credit to the private sector. However, the cause of the increase is the central bank's purchase of Treasury bills, which offsets the initial decline in the money supply. This contrasts with case 3, where commercial banks were able to increase credit because they had excess cash reserves.

The essence of these examples, which could be multiplied, is that the generation and expenditure of counterpart funds by itself does not create money. Money can only be created if either the commercial banks or the central bank take action to expand domestic credit. It is likely that the monetary authorities will do so if there is a long lag between the generation of counterpart, which reduces the money supply, and the expenditure of counterpart by government, which increases it. And this delay is typically quite long, sometimes years. In that case, the central bank can of course neutralize the delayed expenditure of counterpart by reducing the money supply.

A.2 Prices in a Monetarist World

Although the generation of counterpart funds does not itself create money, the entire aid transaction -- including the import of commodities and their sale to the public -- can have an effect on the money supply. Aid-funded commodities can then affect prices in two ways: directly, by adding to the quantity of goods available in the economy, and indirectly, through its impact on the money supply.

These effects can be captured in a simple model that employs the quantity theory of demand for money. Assume an economy at full employment that produces a fixed quantity of a non-tradeable good, Q , whose price is p ; and a fixed quantity of an exportable good, Q_x , which, at a fixed exchange rate e , yields export revenues of X in local currency. Imports, which do not substitute for Q , are either paid for out of the country's own foreign exchange and designated M , or are funded by foreign aid, aF , where F is the value of aid in local currency and a is the share of aid that is converted into commodities. A share, n , of aid-

funded imports substitutes for M . For now, assume that imports are either consumed or invested in capital with long gestation periods, so that capacity output, Q , does not change within the period of the model. The next section deals with a model that allows changes in output.

If the supply of money (liquidity) is designated L , then the money demand and supply are related by

$$pQ + M + aF = vL, \quad (a.1)$$

where v is the velocity of money, assumed a constant. Because exports are not substitutable for home goods (Q) and in any case are in fixed supply, their production does not affect the demand for money. The money supply is

$$L = R + C, \quad (a.2)$$

where C is net domestic credit, an exogenous variable, and R , net foreign reserves, is given by

$$R = R_{-1} + X - M + (1-a)F. \quad (a.3)$$

To simplify notation, any non-subscripted variable refers to the current period, t , and lags will be designated by a subscripted "-1".

Import demand is a function of last period's money income and the proportion of current aid-funded imports, n , that substitute for non-aid-funded imports, or

$$M = mY_{-1} - naF, \quad (a.4)$$

with m the marginal propensity to import. Gross national product is given by

$$Y = pQ + X \quad (a.5)$$

This set of five equations has five unknowns: p , Y , M , R and L . To simplify solution, but with no loss of generality, we impose the following initial conditions: $X = X_0 = M_0 = mY_0 = mQ_0/(1-m)$; $F_0 = 0$; $R_0 = 0$; and $p_0 = v_0 = 1$; then, from a.1 and a.2, $L_0 = C_0 = Q_0/(1-m)$.

With these assumptions, a.2 to a.5 can be substituted into a.1 and rearranged to yield

$$p = m(1-2m)/(1-m) - 2mp_{-1} + [1 - 2a(n-1)](F/Q) + (R_{-1} + C)/Q. \quad (a.6)$$

The factors of 2 that appear in equation a.6 reflect the dual role of imports. An increase in imports with a fixed supply of money reduces prices. At the same time, increased imports reduce reserves and the money supply, which also lowers prices.

The impact of commodity aid on prices can be demonstrated under different conditions by assuming parametric values for equation a.6 and solving it through a number of periods.

Figures A.1 and A.2 show the results for the price level (equation a.6) over five periods, assuming $p_0 = 1$, $Q_0 = 75$, $m = .25$ (so $M_0 = 25$), $a = 1$ (i.e., all aid results in direct commodity imports), $R_0 = 0$ and $C_0 = 100$. The parametric variations are:

- (1) the fraction (n) of aid-financed commodities that substitute for other imports, n , may be 1 or 0;
- (2) aid (F) may increase from its base of 0 to 1 (i.e., 1 percent of GNP) either for two periods, after which aid ceases (Figure A.1), or continuously for five periods (Figure A.2);
- (3) when aid flows for only two periods, counterpart expenditure is assumed to occur during the two years after the aid flow has ceased; when aid is continuous, counterpart is spent simultaneously with the aid flow.
- (4) credit policy may not accommodate private purchases of aid-financed commodities, so there is no net credit creation ($\Delta C = 0$ in the figures); or domestic credit may be created to match the aid-financed imports ($\Delta C = 2$ or 5).

The figures show that even when the monetary authorities do not create domestic credit to finance local purchases of aid-funded commodities, and even though the presence of these commodities ought to lower prices via the quantity equation, commodity aid has a tendency to be inflationary. The only case in which prices do not rise is when commodity aid is continuous, all aid-funded imports are additional to other imports, counterpart is spent simultaneously, and credit policy is not accommodating (Figure A.2, $n = 0$, $\Delta C = 0$).

Even with continuous aid and no credit creation, if aid-financed imports substitute fully for other imports, then over five years prices rise by 3.6 percent (Figure A.2, $n = 1$, $\Delta C = 0$). This happens because the substitution of aid-financed imports for other imports causes net reserves to rise (by over 3 percent of GNP after five periods), so the money supply expands, causing prices and imports to rise in response.

The delayed expenditure of counterpart, depicted in Figure A.1 when aid flows for only two periods, is slightly inflationary, even when domestic credit is not expanded and aid-funded goods are fully additional to other imports ($n = 0, \Delta C = 0$). The culprit, again, is the slight increase in net reserves (1.0 percent of GNP) that occurs when imports fall in periods 2 and 3, adding to the money supply. Of course, if credit policy is accommodating and domestic credit is not contracted when counterpart funds are spent, inflation is exacerbated. The highest inflation, over 7 percent after five years, is generated when domestic credit expands at the same rate as commodity aid over the five-year period, with all imports fully substitutable (Figure A.2, $n = 1, \Delta C = 5$). This is twice the rate as when no credit is created ($n = 1, \Delta C = 0$).

Figure A.1: Price Behavior. Monetary Model. Two-period Aid Flow

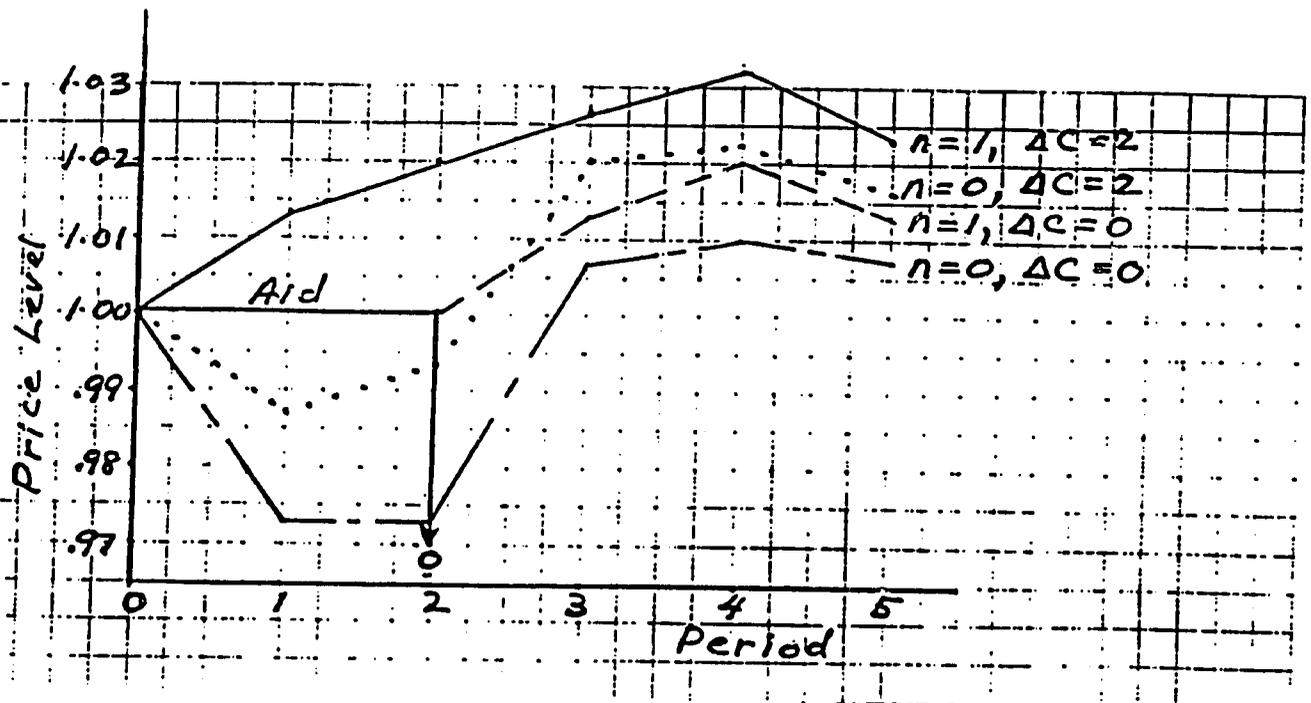
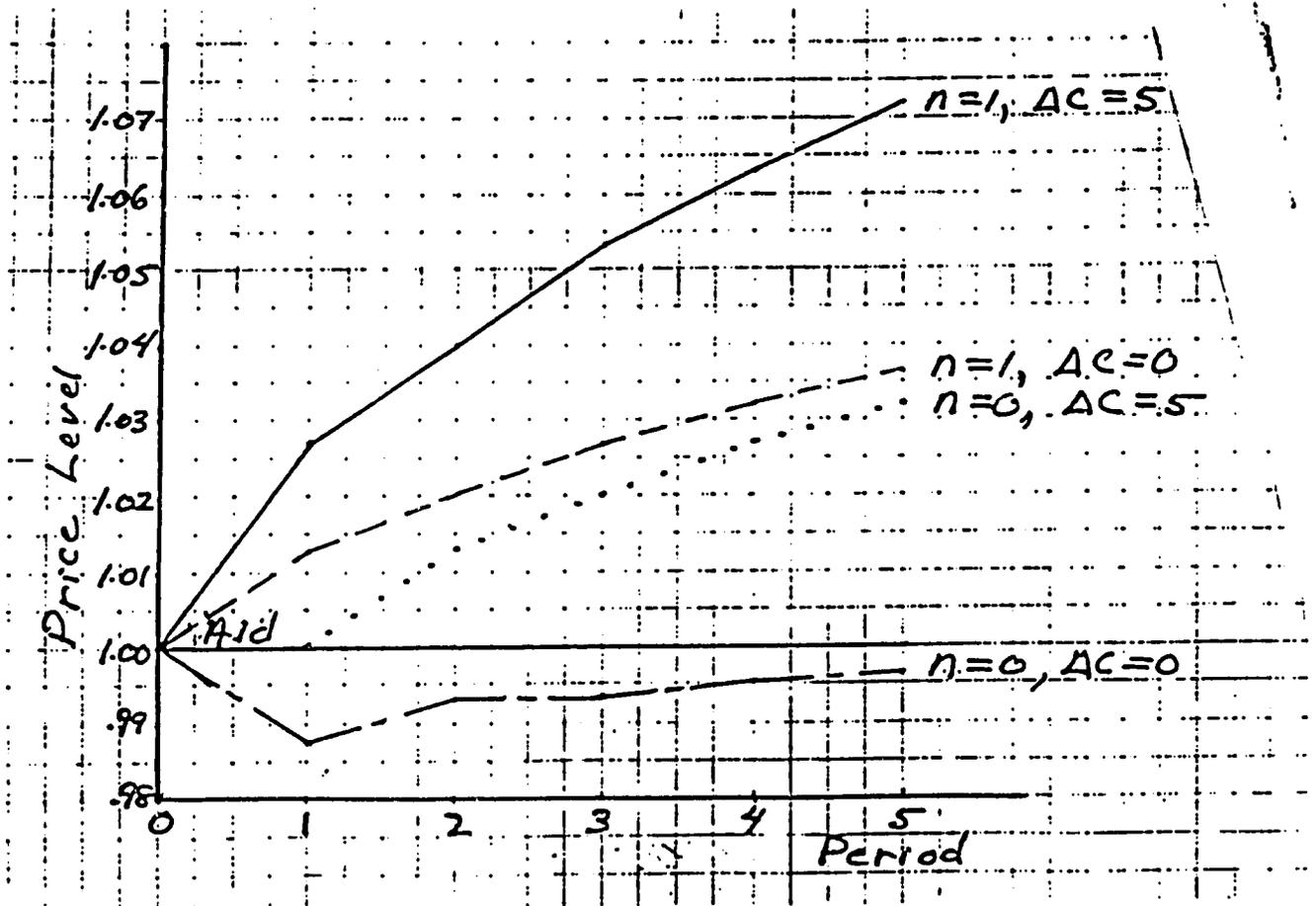


Figure A.2: Price Behavior, Monetary Model, Continuous Aid Flow



A.3 Price Changes when Output is Variable

An alternative scenario that fits the situation for many developing countries would allow output of the home good to increase if commodity aid finances some intermediate goods; and to impose the condition that import licensing keeps imports at a level that can just be financed by exports and foreign capital. The production function may be given by

$$Q = Q_0 (M_{-1}/M_0)^{\beta}, \quad (a.7)$$

with g the elasticity of output with respect to a change in imports lagged one period. With import controls, the balance of payments becomes

$$M = X + F, \quad (\text{a.8})$$

where M is total imports, not just imports of non-aided goods as in the previous section.

The quantity theory equation is now

$$pQ + (1-q)M = vL, \quad (\text{a.9})$$

with q being the share of total imports representing intermediate goods for production of the home good, Q . (The factor, q , cancels out of the production function in the simple form of a.7.) Because foreign payments are always kept in balance by import licensing, net reserves are constant and taken to be zero. Hence the money supply is simply

$$L = C. \quad (\text{a.10})$$

As before, initial conditions are set so that $F_0 = 0$; $M_0 = X_0 = mY_0 = m(Q_0 + X_0)$, so that $M_0 = X_0 = mQ_0/(1-m)$; $p_0 = v_0 = 1$; so that $L_0 = C_0 = (1-qm)Q_0/(1-m)$. Then equations a.7 to a.10 can be solved to yield

$$p = \{C/Q_0 - (1-q)[m/(1-m) + F/Q_0]\}(M_0/M_{-1})^g. \quad (\text{a.11})$$

Solutions of this equation are simulated for five periods with parametric variations similar to those for the monetarist model.

Figures A.3 and A.4 show the path of prices over five periods for a two-period aid flow with subsequent expenditure of counterpart (A.3) and a continuous five-period aid flow with simultaneous expenditure of counterpart (A.4). Variations are shown for the output elasticity: $g = 1$, i.e. output proportional to the level of imports, and $g = .25$, which may be considered an extreme case of a small response, perhaps due to production bottlenecks. In all cases, the proportion of imports going into intermediate goods is $q = .5$; the solutions are not very sensitive to changes in q .

Two factors dampen the inflationary impact compared to the monetarist scenario. First, the output response adds goods to the economy in greater quantity than the absolute increase

in imports of the monetarist model. Second, import controls rule out changes in reserves, so the only source of money growth is an increase in domestic credit. In the case of a two-period flow of aid, all solutions show a drop in the price level as long as aid-financed imports add to domestic output. The final price level depends entirely on domestic credit creation, with price increase proportional to increases in credit.

With continuous aid flows, credit restraint leads to a substantial deflation of over 4 percent by period two, with no rise in prices thereafter. If domestic credit is created to match aid flows, prices begin a sustained rise after the second period. In the case of proportional output response ($g = 1$), the net inflation after five periods is under 2 percent. If the production response is small, however, the inflationary impact can be substantial: with $g = .25$, prices rise 5 percent by period five and continue rising.

Figure A.3: Price Behavior, Growth Model, Two-period Aid Flow

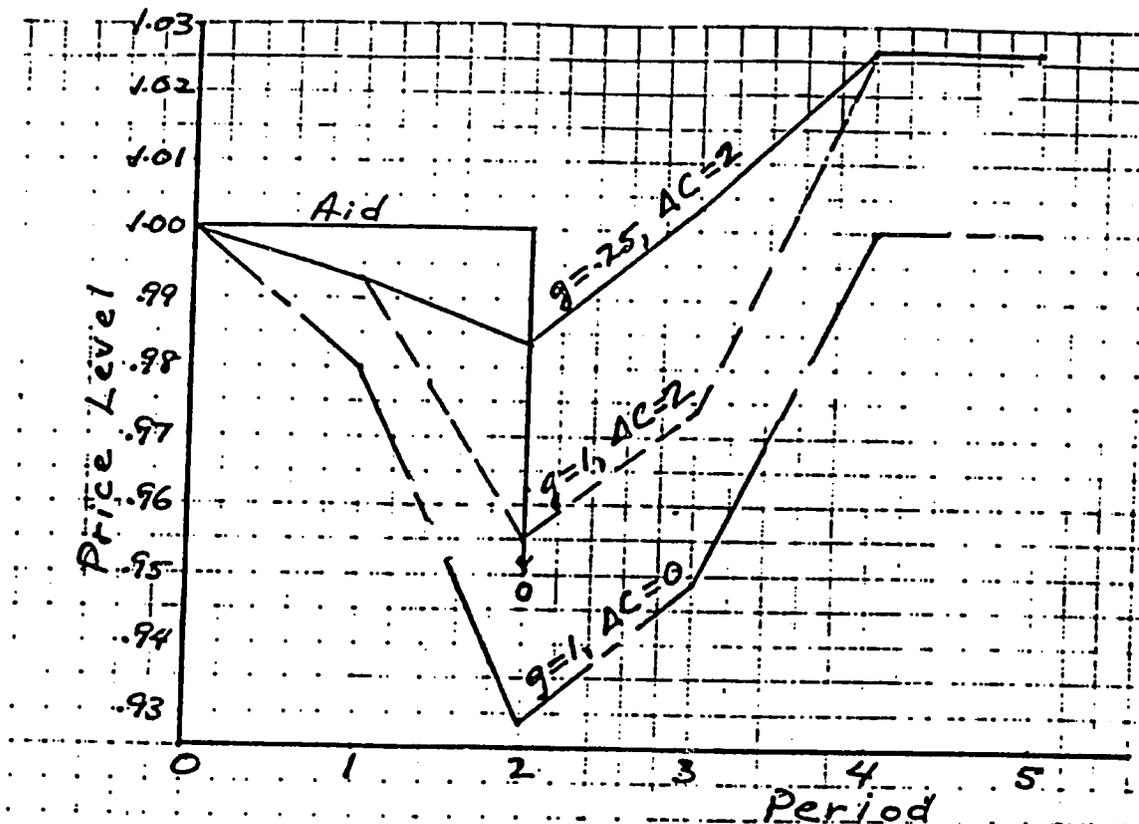
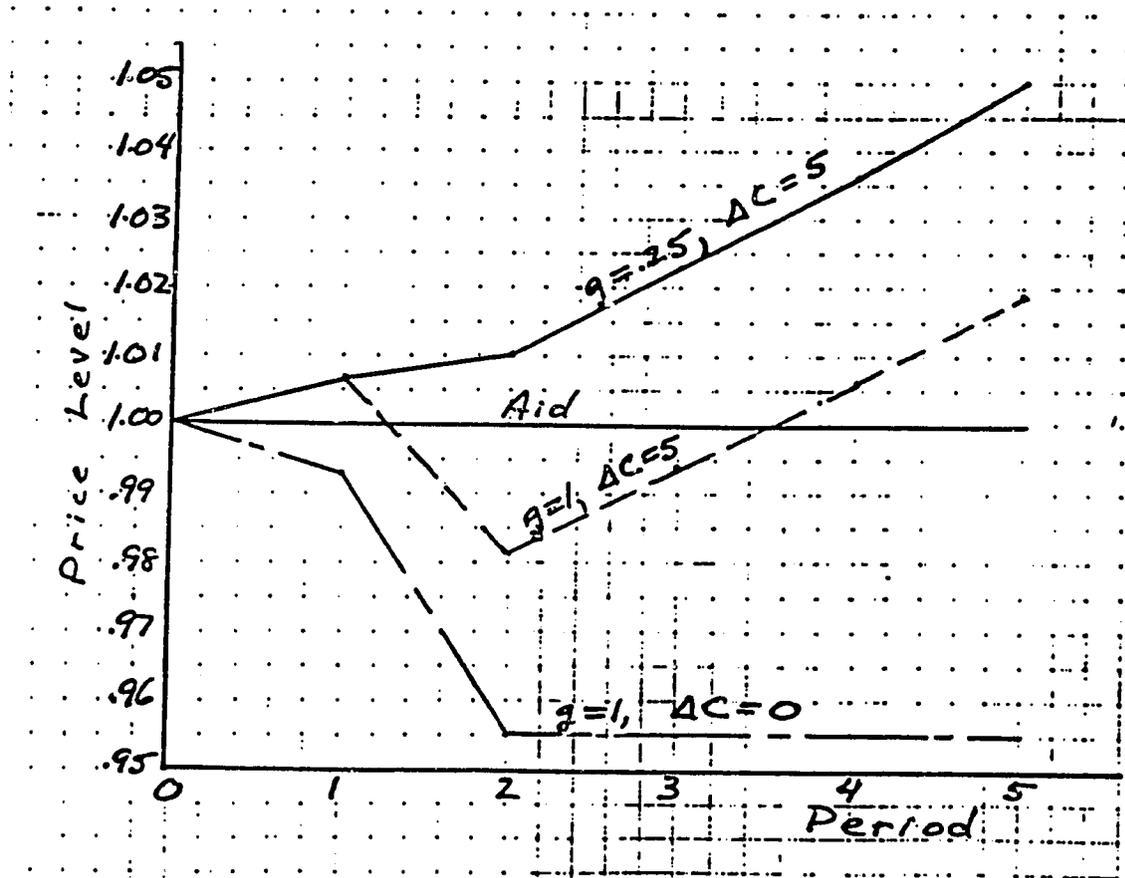


Figure A.4: Price Behavior, Growth Model, Continuous Aid Flow



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