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1. Shantayanan Devarajan
2. Dani Rodrik
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MACROECONOMIC ADJUSTMENT IN DEVELOPING COUNTRIES

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Authors: Shantayanan Devarajan, Harvard Institute for International Development (HIID)
Dani Rodrik, Harvard Institute for International Development (HIID

Prime Contractor: **Abt Associates Inc.**, 55 Wheeler Street, Cambridge, MA 02138 • (617) 492-7100

Subcontractors: **Harvard Institute for International Development,** Harvard University, One Eliot Street, Cambridge, MA 02138 • (617) 495-2164
Food Research Institute, Stanford University, Stanford, CA 94305-6084 • (415) 723-3941
North Caroline State University, Department of Economics and Business, Box 7645, Raleigh, NC 27695-7645 • (919) 737-7187
Abel, Daft & Earley, 1410 King Street, Alexandria, VA 22314 • (703) 739-9090
International Science and Technology Institute, 1129 20th Street, NW, Suite 800, Washington, D.C. 20036 • (202) 785-0831
International Food Policy Research Institute, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036 • (202) 862-5600

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PREFACE

This monograph is divided into two parts. Part I spells out a framework for analyzing macroeconomic policies of developing countries. The framework consists of some national income accounting identities and models that link macroeconomic policies with output, employment, inflation, and the current account. Part II consists of a set of cases or episodes in the macroeconomic history of various developing countries. The analytical framework in Part I serves as a backdrop for assessing the case studies of Part II. The cases, in turn, show how the analytical framework needs to be sharpened or extended to deal with the realities of development policy. Taken together, the two sections of this monograph represent a first-cut at developing rules-of-thumb for evaluating structural adjustment programs in developing countries. The two cases included here, on Indonesia and The Gambia, were created prior to the APAP project, by the case study program at the Kennedy School. There are two additional cases in process relating to Pakistan and Bangladesh, supported by the APAP II project.

Executive Summary

This monograph presents an analytical framework for evaluating stabilization and structural adjustment programs in developing countries. Two case studies, one on Indonesia, the other on the Gambia, illustrate and extend the framework in the context of actual decisions facing policymakers and their advisers.

The analytic framework draws on the analogy with cost-benefit analysis of investment projects. In order to evaluate a project, one needs to estimate the impact of a project's inputs and outputs on the economy. With structural adjustment and stabilization programs, we need to estimate the impact of <u>policies</u> on the national economy. For example, how will devaluing the exchange rate affect imports, exports, output, prices and incomes?

The underlying philosophy of this paper is that there is no single model which will answer all such question about stabilization and structural adjustment. Rather, we present a family of models, each of which is designed to highlight a particular aspect of the macroeconomy. The hope is that, by the end of the monograph, the reader will not only be familiar with the models themselves, but also have a sense of which is best suited for which question.

We begin our presentation of the analytical framework by reviewing the basic national income accounting relationships in an open economy. Focusing on the current account balance -- arguably the central area of concern to most developing countries in the 1980's -- we show its relationship to imports and exports on the one hand, and to income and absorption on the other.

This discussion of national income identities sets the stage for the first of several models to be presented in the discussion: the open-economy Keynesian model. Being simple, easy to implement and based on national

accounts, the Keynesian model has become somewhat of a workhorse in the stabilization/ structural adjustment field. We show how it provides the rationale for cutting absorption to improve current account balances. We also discuss some of the model's limitations and possible extensions.

Equally important, but based on completely different assumption, is the "elasticities approach to the balance of payments." We therefore review this model and show how it motivates most discussions about devaluation of the exchange rate.

Finally, we present the Salter-Swan or "dependent economy" model as a synthesis of the Keynesian and elasticities approaches. As a general equilibrium model, the Salter-Swan model captures the effects of expenditure-reducing policies as did the Keynesian model. At the same time, changes in policies affect prices, including the real exchange rate, so that many of the desirable features of the elasticities approach are preserved. Indeed, we show that the Salter-Swan model is implicit in virtually all discussions about structural adjustment or stabilization policy.

Up to now, we have not mentioned monetary policy, despite its importance to the topic at hand. We turn therefore to an extension of the Salter-Swan model, which includes money as a medium of exchange. In this variant, a nominal exchange rate devaluation can have different effects, whereas the impact of expenditure-reducing policies is qualitatively similar to that in the model without money.

Of course, money has other uses, including its role as a store of value. Furthermore, monetary policy is more than exchange rate policy; it includes domestic credit creation (government borrowing form the Central Bank) and interest rates. The next section of the monograph presents a series of models

that capture these features. To be sure, some of these models sit somewhat uncomfortably next to those in the previous section, reflecting the problems of including money in general equilibrium models. Nevertheless, they are useful, not to say essential, in analyzing short-run stabilization issues such as inflation.

The starting point of these monetary models is a series of accounting identities linking the balance sheets of the Central Bank and commercial banks. Different models then specify different functions for the demand for money. Policies include government borrowing from the Central Bank and exchange rate devaluations. The last model looks closely at the "inflation tax" and how economies get caught in an inflationary spiral. The model is used to underpin a discussion about different causes of inflation, and the implications for policies to contain it.

In sum, the analytical framework consists of a family of models, each one of which is designed to highlight a particular issue in structural adjustment or stabilization policy. In the real world, however, structural adjustment and stabilization involve a host of issues, and the problem is one of designing a comprehensive "package", rather than isolating a particular policy. The two case studies that follow the analytical framework illustrate this point rather graphically. In the Indonesia case, the decision about whether or not to devalue the Rupiah in 1986 turns out to be connected to Indonesian trade and industrial policy as well as the country's history, politics and culture. All of these aspects are brought out in the case. Similarly, The Gambia in 1985 was facing not just one but a series of problems, ranging from debt to inflation to an acute shortage of foreign exchange reserves. The case shows how a comprehensive and mutually

reinforcing set of policies were needed so that the crises would not recur a few years later.

This monograph is part of an on-going effort to develop usable tools for evaluating structural adjustment and stabilization programs in developing countries. Two more case studies, one on Pakistan, the other on Bangladesh, are currently being revised. However, it is plain that the analytical framework, while useful in sharpening one's thinking, cannot be applied explicitly in every country. The next step therefore would be to combine the lessons from the case studies with the analytical framework in order to distill some "rules-of-thumb" which would guide policymakers as they chart their economies' course through the hazardous waters of stabilization and structural adjustment.

I. The Accounting Framework

A. National Income Accounts and the Current Account Deficit

Many of the problems facing developing countries today have to do with unsustainable current account deficits. Just what is the current account deficit and how does it get so large? How do we reduce it? Answers to these questions require an understanding of national income accounts, the national economy's equivalent of double-entry bookkeeping by firms. This is the subject to which we now turn.

All national income accounting stems from a single idea that is in many ways the cornerstone of macroeconomics: every act of expenditure is also an act of income generation. When you buy a pair of shoes (an act of expenditure), you are also creating income for some, possibly several, people: the cobbler, the truck driver who shipped it to the warehouse, the warehouse owner and the shoe salesman. If that pair of shoes cost $50, every dollar of that fifty accrues as income to somebody. For example, suppose that $50 consisted of $25 in wage payments, $20 in profits and $5 in material costs. Suppose further that the $5 in material costs consisted of $3 in wages and $2 in profits (see below):

Shoes: $50		Materials: $5	
Wages	$25		$3
Profits	$20		$2
Materials	$ 5		

Total income: $50 ($25 + 20 + 3 + 2)

Total final demand: $50

Note that the total income generated is $50. This is also the value of the only final good produced -- shoes. We define final goods as any good that is not used as a material input into producing another good. For example, crude oil or fertilizer are not final goods. Shoes are a particular kind of final good, namely, a consumer good. Other types include investment goods (machines, etc.), goods purchased by government and goods purchased by foreigners (exports). Following our reasoning above, total income in the economy, Y, should be equal to the value of final goods produced, or:

$$Y = C + I + G + E \qquad (1)$$

where y = income, c = private comsumption, I = investment, G = government consumption and E = imports.

What if imports were used in the production of shoes? If, say, $10 worth of imported inputs were necessary, this would raise the value of the finished shoes to $60. Yet, the income accruing to domestic residents from shoe production would still be only $50. Hence, we need to amend our equation (1) to include imports:

$$Y + M = C + I + G + E \qquad (1')$$

The second idea in national income accounting is that the sources of income must equal the uses of income (this is equivalent to a system of double-entry bookkeeping). We have identified the sources of income above (private comsumption, investment, government consumption and exports). The uses of income are: consumption, saving and taxes. Hence, we have a second identity:

$$Y = C + S + T \qquad (2).$$

Combining (1') and (2), we obtain:

$$C + I + G + E = C + S + T + M \qquad (3).$$

Some manipulation leads us to a fundamental accounting identity in balance of payments accounting:

$$(I - S) + (G - T) = M - E \qquad (4).$$

The expression M - E is the current account deficit. Equation (4) tells us that the current account deficit is equal to the sum of the excess of investment over savings (I-S) and the fiscal deficit (G-T). Thus, if a country is facing a current account deficit, it must be that either its investment expenditure exceeds its domestic savings or government current expenditure exceeds tax revenues (or both). For example, in 1986, the United States' trade deficit was about $100 billion and the federal deficit (G - T) about $200 billion. We can conclude that the private sector is saving about $100 billion more than it is investing. Note further that equation (4) underpins most of the policy advice that countries get (from The World Bank and the IMF, say) about reducing their current account deficits: the advice usually entails a cut in government spending (G), possibly an increase in taxes (T) and frequently a cutback in investment (I). Countries are also always exhorted to increase their domestic savings rates. Since (4) is an identity, by getting its left-hand side down, the right-hand side will also decline.

An alternative formulation of equation (4), which is relevant for many developing countries, is to decompose I into private and public components.

$$I = I_p + I_g \qquad (5).$$

Then, if we rename S as S_p since it represents private savings, and observe that (T - G) is public savings, S_g, we obtain:

$$(I_p - S_p) + (I_g - S_g) = M - E \qquad (6).$$

In this way, the trade deficit can be decomposed into a public and private sector component. Such a decomposition yields insights into the causes of a trade deficit. For example, a comparison between Ivory Coast and Senegal shows that, while both ran chronic trade deficits in the late 1970's-early 1980's, Ivory Coast's was driven by public sector borrowing, while Senegal's was due to a savings shortfall by the private sector.[1]

*A Digression on Social Accounting Matrices

The above accounting identities can also be seen by viewing them in terms of social accounting matrices, or SAM's. Originally designed to broaden the standard input-output tables to incorporate "social" characteristics such as the distribution of income, SAM's have come to serve as a means of developing a consistent data base for a country. A

[1]For details, see Devarajan, S. and J. de Melo, "Adjustment with a Fixed Exchange Rate: Cameroon, Cote d'Ivoire and Senegal," World Bank Economic Review, September 1987.

SAM is based on two priciples. First, not only is income equal to expenditure for the whole economy, but this identity must hold for every agent in the economy, where "expenditure" includes savings, and "income" includes borrowing. Now consider a matrix where the rows represent agents' incomes and the columns their expenditures. Since every act of expenditure is an act of income generation by an agent, such a transaction can be represented by a cell in the matrix. For example, a tax payment by households to government is an expenditure by households and an income for the government. Hence, this payment will be in the cell which is the intersection of the government row and household column. This is the second principle underlying the SAM. Combining these two ideas, we see that the SAM is a square matrix whose row and column sums must be identical.

To cast national income accounts in a SAM framework, we consider the following classes of agents in the economy (which will constitute the rows and columns of the SAM): producers, households, government, capital account and the rest of the world. Figure 1 displays such a SAM.

Producers make factor payments to households for production and buy imports from the rest of the world. Hence, the producers' column has two elements in it, Y (for value added, or GDP) and M, imports. Households take this factor income and spend it on consumption, C. In addition, they pay taxes, T, to government and save S. Savings, S, is deposited to the "capital account". The government, in turn, buys consumption goods, G, and saves the remainder, S_g. Finally, the rest of the world buys exports, E.

and pays "foreign savings", S_f to the capital account. Note that some of the cells will be empty -- either by definition (the diagonal entries, for example) or because our economy is so simple that such transactions do not occur.

Observing the row and column identities of the SAM, we can derive the following accounting identities immediately:

$$Y + M = C + I + G + E$$

$$Y = C + S + T$$

$$I = S_p + S_g + S_f$$

$$M = E + S_f$$

Figure 1

	Producers	Households	Governm't	Capital	RestWorld
Prod		C	G	I	E
H/H	Y				
Govt		T			
Cap		S_p	S_g		S_f
RoW	M				

B. The Trade Deficit and the Current Account Deficit

Up to now, we have been discussing the current account deficit and its relationship to income and expenditure. However, policymakers, the press, and the general public often focus on the trade deficit, the difference between merchandise imports and exports -- that is, trade in *goods*. The trade deficit is but one component of the current account deficit, as there are many other foreign exchange transactions by the economy. For starters, there is trade in services -- consultants' fees, Korean construction firms operating in Saudi Arabia, and suchlike. These are included in the balance of payments accounts as trade in non-factor services. Trade in factor services involves income from ownership of factors (labor or capital) abroad; or payments abroad for foreigners' ownership of factors in the domestic economy. For example, if I earn dividends from ownership of foreign stocks, that payment is factor income from abroad. Similarly, if a foreigner owns shares in a domestic company, the dividend payments to him are a factor payment abroad. The most important component of this item are the interest payments on foreign debt. In Brazil since the late 1970's, these began to dominate the current account. By 1981, there was a trade surplus of $1.2 billion, while the current account *deficit* was $16.3 billion. The difference was mainly the high interest payments on Brazil's enormous foreign debt.

The final item in the current account are transfer payments. Included in this is foreign aid and workers' remittances, both of which can be significant for some developing countries. The net sum of all of these items is called the current acccunt balance (see Table 1). It

represents the net flow of resources across the country's border. As with any net flow, it has to be matched with some change in a stock. This is analogous to the fact that the difference between your personal income and expenditure is reflected in the change in your bank balance. For countries, these stock changes are recorded in the capital account.

C. The Current Account and the Capital Account

The capital account represents any transaction that involves a claim by one national on another. The two most common are direct foreign investment (equity ownership) and foreign borrowing (debt ownership). In most countries, the latter dominates the former. Note that with the capital account, an inflow is positive and an outflow negative. This is because we are interested in adding up the current and capital accounts to see what change in reserves are needed. For example, if a current account deficit of $10 billion were matched with foreign borrowing of $10 billion, no change in reserves would be necessary. In the balance of payments account, the -$10 billion in the current account would be offset by a +$10 billion in the capital account, so the balance of payments deficit would be zero. If, on the other hand, there was a difference between the current and capital accounts, the difference will have to be met by a change in reserves. For example, if the current account deficit were $10 billion, but borrowing only $5 billion, then the country's foreign exchange reserves would have to be depleted by $5 billion.

Having defined the balance of payments accounts, we can make the following observations about contemporary issues. First, we can see clearly why countries like Brazil and Mexico are having to run huge trade surpluses these days. No one is willing to lend to them, so their capital account is effectively near zero. If they do not want to touch their reserves, they have to run a current account of zero. Yet, they have huge interest payments on their foreign debt -- a negative item on the current account. Hence, this must be offset by a positive trade balance. Second, note how transfer payments like workers' remittances and foreign aid (grants) enable a country to run trade deficits without incurring any foreign debt. However, when the aid runs dry or the workers return home (as is happening in Pakistan these days, for example), unless the trade deficit is reversed, the country's foreign debt begins to mount.

Table 1

The Current Account

	Merchandise Exports
-	Merchandise Imports
=	Trade Balance
+	Service Exports
-	Service Imports
+	Net factor payments
=	Current Account Balance

II. Keynesian Models of the Small, Open Economy

A. The Problem

In the previous section, we first defined the current account balance from national income accounts, and then showed how it is related to the trade balance, on the one hand, and the capital account on the other. Now, the current account balance has been the source of much concern for many developing countries in the past ten years. This is because, as we observed, a current account deficit has to be met by a corresponding capital inflow (assuming no change in reserves). If this capital inflow is in the form of foreign borrowing, the resulting debt burden (and debt-service payments) may be undesirable. Hence, the focus on the current account deficit is not misplaced. Our problem is: given the country has a large and possibly unsustainable current account deficit, how do we reduce it?

B. Solving the Problem

Two things are clear about the solution to this problem. First, there is no unique answer to the question. If there were, macroeconomic policy would not be so controversial, and developing countries would not be struggling with persistent current account deficits. Second, the question cannot be answered without an explicit statement about how the different variables that affect the current account balance are influenced by policy instruments. That is, we need a model. We will consider a sequence of models, each of which sheds light on a particular aspect of the problem.

We begin with a class of models known as fix-price, Keynesian macromodels. To understand these, it is best to go back to our national income identities, but look at them in a slightly different light. Recall that we drew an equality between income and expenditure in deriving our fundamental national income identity last time. The reason for this equality is of course *production*. Expenditure (or demand) causes production to take place which, in turn, generates income. Define Y as total production or income. This has to be equal to production for domestic use, D, and exports, E.

$$Y = D + E \tag{II-1}$$

Now, total expenditure by domestic residents is equal to D plus imports, M. This is in turn equal to the different components of expenditure, C, I, and G.

$$D + M = C + I + G \tag{II-2}$$

Rearranging (II-1) and (II-2), we obtain:

$$Y = C + I + G + E - M \tag{II-3}$$

The first three components of the right-hand side of (II-3) are often called "absorption", A. Then, (II-3) can be rewritten,

$$Y = A + CAB \tag{II-3'}$$

where CAB stands for the current account balance. Note that CAB is positive when there is a surplus and negative when there is a deficit. A current account deficit can then be interpreted as an excess of absorption over income: The amount an economy earns from its production exceeds the amount it wishes to demand, or "absorb". In this way, reducing a current account deficit can be achieved either by increasing income, Y, or reducing absorption, A. To determine how this may be done, it is necessary to specify a model that links Y and A to various

policy instruments.

The fix-price, Keynesian model begins with the identity (II-3) and adds behavioral equations that link consumption demand, C, and import demand, M, to income, Y. In the Keynesian tradition, they allow consumption demand to be a linear function of income:

$$C = c_o + cY \tag{II-4}$$

Imports, too, are considered to be a linear function of income:

$$M = m_o + mY \tag{II-5}$$

Note that (II-5) is most realistic when imports are taken to be intermediate goods, so they depend on the scale of production, rather than consumer goods, in which case they may be better modelled as a function of A. The Keynesian models take investment, I, government expenditure, G and exports, E as exogenous. Finally, and most importantly, they assume that production, Y, expands at constant marginal costs (this is the fix-price assumption). Thus, there are no capacity constraints in the short-run. Labor is available in perfectly elastic supply at a given wage.

Given all these assumptions, the system (II-3) - (II-5) represents a fully specified model of the macroeconomy. We can solve it to derive multipliers of the response of income and the current account balance to changes in the exogenous variables. The solutions for Y and CAB are:

$$Y = (1/(1-c+m))(c_o+I+G+E-m_o) \tag{II-6}$$

and $$CAB = E - m_o - (m/(1-c+m))(c_o+I+G+X-m_o)$$

In words, a one percent increase in government consumption (G), say,

will increase income by $1/(1 - c+m)$. It will reduce the current account balance by $m/(1 - c+m)$. Note that introducing the foreign trade sector reduces the traditional Keynesian multiplier (which is equal to $1/(1-c)$). This is because imports represent an additional "leakage" from the system which does not exist in the closed economy. The impact on the current account balance of an increase in government spending is unambiguously negative: the multiplier is $-m/(1-c+m)$. This is presumably part of the rationale behind the almost universal call to cut government spending in countries with large current account deficits. What will the effect on the current account balance of an increase in exports be? On the one hand, it should improve the balance, since exports are a source of foreign exchange. On the other hand, through multiplier effects, they increase incomes which in turn means an increase in imports. The total effect is equal to

$$1 - m/(1-c+m) > 0.$$

Note that although the increased imports dampens the effect of the export expansion, the net effect is unambiguously positive.

*The Keynesian Model in Diagrammatic Form

To reinforce this material it is perhaps worthwhile to look at the Keynesian model in a diagrammatic form. Consider, therefore, again the four equations of the model:

$$Y = C + I + G + E - M$$

$$C = c_o + cY$$

$$M = m_o + mY$$

$$I = \bar{I}, \quad G = \bar{G}, \quad E = \bar{E}$$

Note that if we make the observation that $Y = C + S + T$, we can rewrite (II-1) as

$$(I - S) + (G - T) = M - E.$$

Assume for the purposes of this diagrammatic exercise that G = T. Then, we can view equilibrium in this model as that Y for which (I - S) equals (M - E). To view this, we first plot I and S as functions of Y (Figure 1). Note that although S varies with Y, I does not. It is in this sense that we take I to be "fixed" or exogenous in the model.

We can similarly plot M and E as functions of Y. Note once again that E is independent of Y, while M is not.

From Figures 1 and 2, we can see that I - S is downward-sloping in Y, while M - E is upward-sloping. Plotting these two lines on the same graph gives us the equilibrium Y. If the equilibrium point occurs above the horizontal axis, then the economy has a balance of current account deficit.

This diagrammatic treatment also permits the analysis of changes in the exogenous variables. For example, suppose we are considering a stabilization program entailing a cut in investment. In Figure 1, the investment line is shifted downward. This has the effect of shifting the I - S schedule downward, lowering the equilibrium Y and, as it is drawn, reversing the deficit to a surplus.

A few observations about this Keynesian model are in order before we leave it. First, when we lower the deficit by lowering investment (or government spending), we contract output. This contraction in output lowers imports, further improving the current account balance.

However, when we contract output, in this fix-price world, we do so by increasing unemployment. The burden of adjustment falls on the unemployed, who are typically among the poorer elements of the population. The second point is that the economy is not capacity-constrained. This is why output can expand and contract without changing prices. If the economy were capacity-constrained, output would not change at all. Instead, prices would do all the adjusting. In Chapter III, we turn to this case.

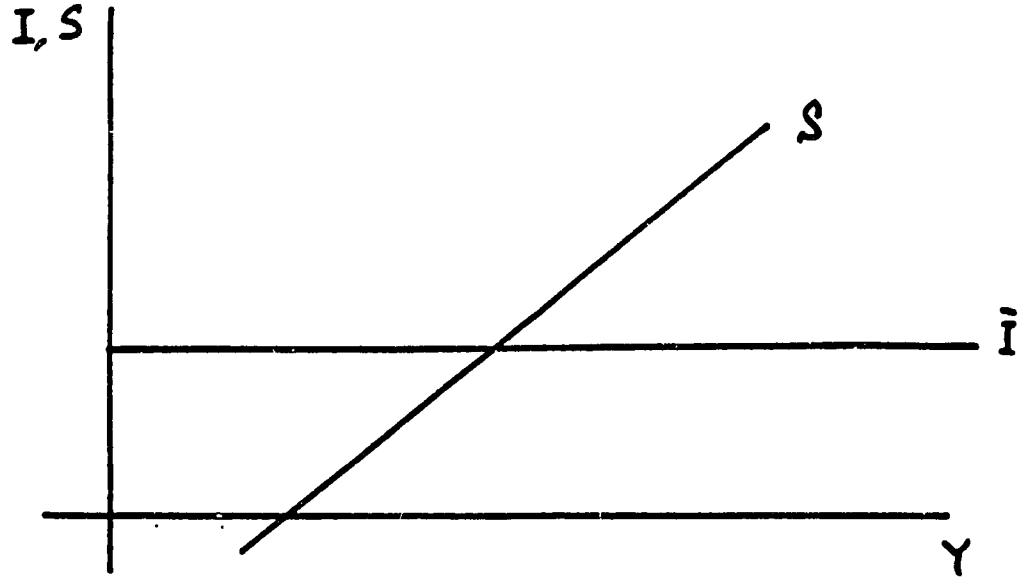


Figura II-1

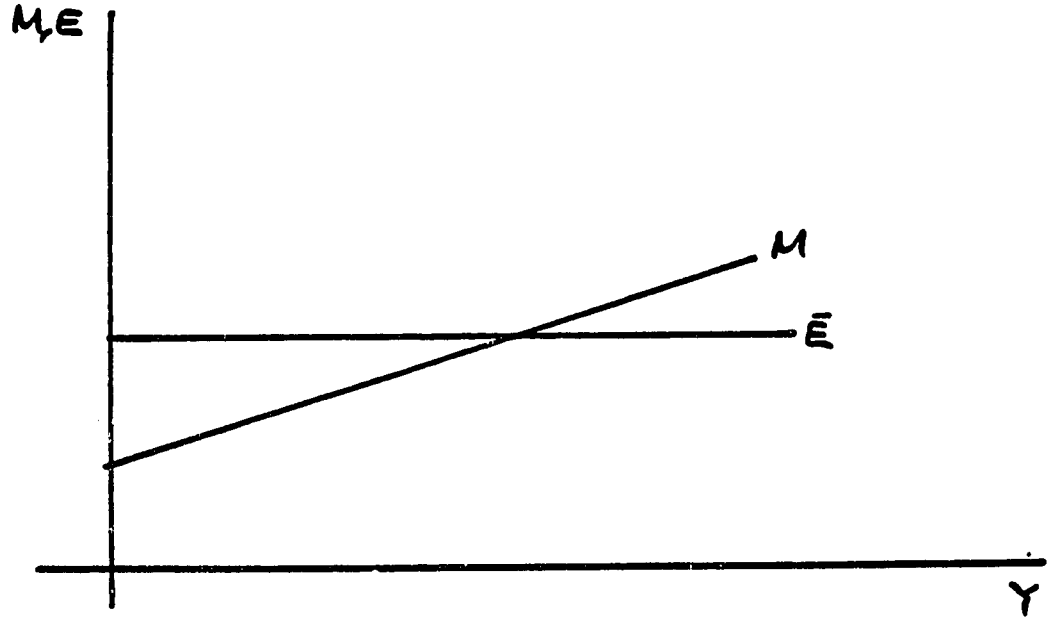


Figura II-2

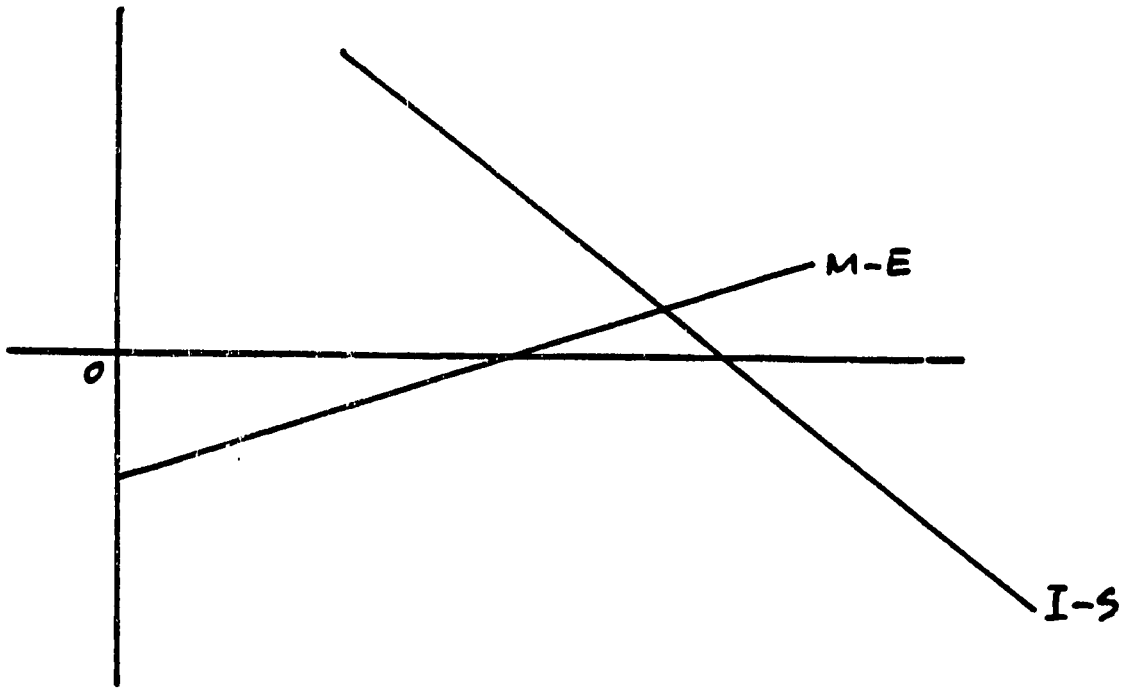


Figure II-3

III. Flexible-Price Models

A. The Elasticities Approach

The Keynesian model can be characterized as one which assumes only income effects determine the current account balance. We now consider the polar case: when there are no income effects, and prices determine the current account balance. In particular, prices determine a main component of the current account balance, namely, the trade balance. Among all the prices in the system, (wages, food prices, etc.), it is felt that the *exchange rate* is the most important in driving the trade balance. This is because an external can be thought of as excess demand for foreign exchange. Whenever there is excess demand, economists think of raising the price in that market to eliminate the excess demand. In the case of foreign exchange, the "price" is the exchange rate: the rate at which domestic currency can be traded for dollars. In what follows, we will define precisely what is meant by a market for foreign exchange, how supply and demand are determined in that market, and the effect of a devaluation of the exchange rate on this market and on the trade deficit.

The trade deficit is the difference between the *value* of a country's merchandise imports and the *value* of its exports. imports, a country needs foreign currency; by selling exports, it earns foreign currency. The current account deficit can be thought of as the difference between the demand for foreign currency (the value of imports) and its supply (the value of exports). In this sense, a current account deficit is associated with excess demand for foreign currency.

Going from this observation to drawing supply and demand curves for foreign exchange is, however, more subtle. We are used to thinking of supply and demand curves as representing the relationship between prices and *quantities*. Here, we are interested in plotting the relationship between a price (the exchange rate) and *values* (that is, a price multiplied by quantities). In fact, there exist demand and supply relationships between prices and the quantities of exports and imports. We will now show how these relationships lead to well-defined supply and demand curves for foreign exchange.

First, an apology about notation. Up to now, we have been using the symbols M and E to represent the *values* of imports and exports respectively. That is, M is the price of imports multiplied by the quantity of imports. We are now going to switch and let M and E be the *quantities* of imports and exports. We will let p_M and p_E stand for the domestic prices and imports and exports. For example, p_M is the price in domestic currency that the local citizens pay for imports (the price of California wine in Mexican pesos, say). It is reasonable to assume that demand for imports (in quantity terms) is a downward-sloping function of p_M. That is, the more Mexicans have to pay in pesos for California wine, the less wine they will buy. What about the supply of M? Since foreigners are supplying it, they do not care about the domestic (i.e. peso) price. What they care about is the world, or dollar price. Moreover, if the importing country is small, we can assume that foreigners are willing to supply any amount at a given world price p_M^*. This amounts to saying that Mexico accounts for a tiny fraction of the seller's sales of imports. Finally, the relationship between p_M and p_M^* is given by:

$$p_M = ep^*_M$$

Note that we are assuming no import tariffs or quotas. Now, what happens when we devalue the exchange rate? Note that a devaluation is an *increase* in e, the number of pesos per dollar. The supply curve for imports has not changed (since the foreign currency price of imports has not). Moreover, while the demand curve for imports has not changed in terms of domestic currency (since that is based on tastes), in terms of foreign currency it has. That is, for the same p^*_M the amount of imports demanded will have declined (because they cost more in domestic currency). Thus, the demand curve for imports in terms of p^*_M shifts in. I this way, the demand for foreign exchange will have declined with a devaluation. Thus, we can say that the demand curve for foreign exchange is downward-sloping in e, the exchange rate. (Figure III-1)

A symmetric analysis can be performed on the export side. The supply curve of exports, in domestic currency, is upward-sloping. The demand curva for exports is perfectly elastic at world market prices. That is, Mexico cannot affect world prices with its exports (another side of the small country assumption). Putting these two together, we observe that a devaluation will shift the export supply curve (with respect to world prices) outwards. Thus, a devaluation will increase the supply of foreign exchange. (Figure III-2).

Having ascertained that there are indeed well-defined supply and demand curves for foreign exchange, we can put them on the same diagram and observe the effects of a devaluation. If there is a current account deficit, the exchange rate is below the equilibrium value, i.e. it is "overvalued". A devaluation will lower this deficit, and perhaps turn it into a surplus.

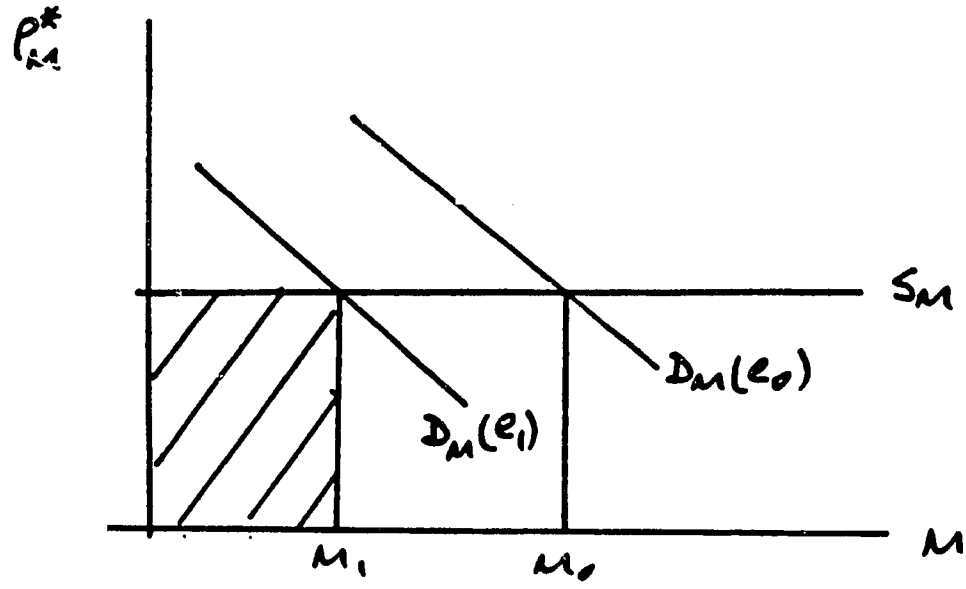


Figure III-1

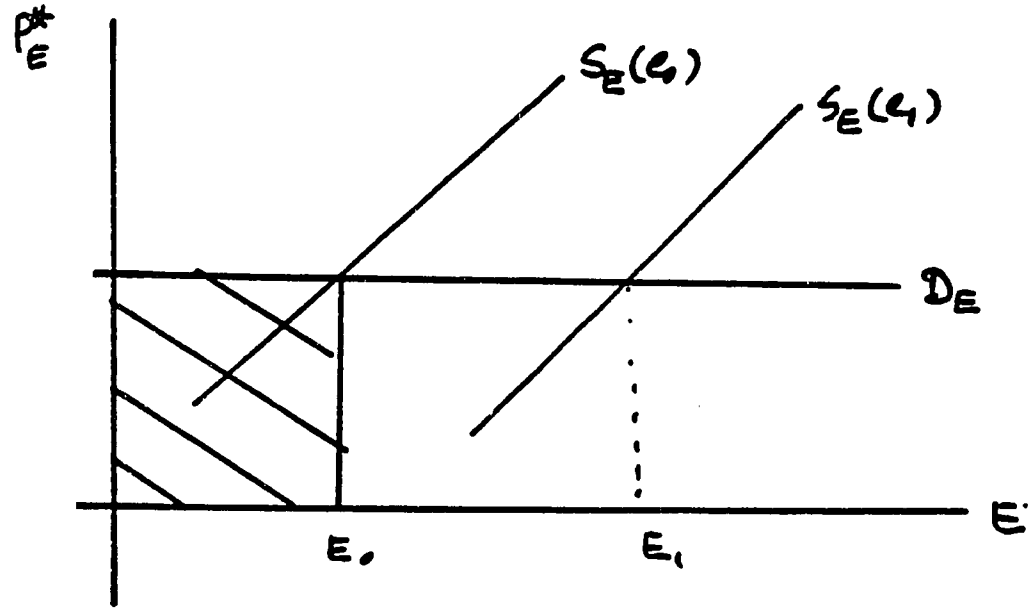


Figure III-2

Now, this simple model can be criticized on several fronts. First, not everybody believes that export demand curves are perfectly elastic. If a country has monopoly power in world markets, it can affect the world market price by its supply decisions. Hence, the demand curve it faces is downward sloping. This would be the case with the U.S.'s agricultural exports. It is also the case with some small countries that dominate the world market in certain commodities: Malaysia's rubber, Ivory Coast's cocoa and Sri Lanka's tea. In addition, the notion that a country can export as much as it wishes at a given world price is difficult to swallow in a world of protectionism, quotas and increasing problems with export-oriented growth. If we allow the export demand curve to downward sloping, and in particular inelastic (i.e., an elasticity less than one), then the supply curve for foreign exchange will be downward, rather than upward sloping. An extreme case of this is when the export demand curve is completely inelastic (an elasticity of zero). Then a devaluation will shift the export supply curve out. Since the quantity will not change, revenues will fall. Therefore, the supply of foreign exchange is downward sloping with respect to the exchange rate. If this were the case, notice that a devaluation could worsen the current account balance. This is a special case of what is generally known as the Marshall-Lerner conditions, which must hold for a devaluation to improve the current account balance.

A few points about low export demand elasticities are in order. Early efforts at estimating these elasticities showed that they were indeed low, and possibly less than one. However, for at least two reasons these have fallen out of favor. First, it can be shown that the econometric estimates are biased downwards. That is, they *understate*

the "true" demand elasticity by ignoring supply-side effects. Second, if we believed these elasticities, we would recommend a *revaluation* of the currency to correct a trade imbalance. No one, not even one of the famous "elasticity pessimists" is willing to recommend that.

A related problem has to do with time lags and how contracts are written. For a typical developing country (and even more so for developed countries), import contracts are denominated in dollars while export contracts are in the local currency. In this case, a devaluation will initially worsen the current account balance: the import bill will not change, but the export bill will decline in foreign currency. Only when enough time has elapsed and contracts are rewritten does the current account balance improve, for the reasons mentioned above. This slow adjustment of the current account balance to a devaluation is known as the "J-curve". It may explain the behavior of the U.S. dollar in the first half of 1986, when the dollar/yen rate fell precipitiously but the U.S. trade deficit worsened.

A second observation is that we have assumed the only effect of a devaluation is to alter the domestic price of imports and exports. However, a devaluation can have other effects as well. In particular, it can raise prices elsewhere in the economy. Indeed, if a 10% devaluation has the effect of raising all prices by 10%, then it would have no effect on the current account balance. Moreover, this would indeed be the case if all prices were flexible and there was full employment in the economy (i.e., we allowed for income effects, which we have not done in this

analysis). This is a point to which we will return in the next section.

Finally, no discussion about devaluation would be complete without mention of its political ramifications. For a variety of reasons, devaluations can threaten the political stability of a nation. A study by Richard Cooper showed that in seven of twenty-four devaluations in the 1970's, the government fell within four months of the act. Devaluations hurt the urban rich (who consume the lion's share of imports), who may also control the political power in the country. Frequently, it is the army (which also consumes imports in large quantities) that comes in to overthrow the government after a devaluation. Whatever the reason, no decision to devalue the currency should be taken lightly, despite its seductive benefits for the current account balance.

B. The Absorption Approach

In addition to cases when the Marshall-Lerner conditions are violated and to distributional considerations, a nominal exchange rate devaluation is viewed with caution for at least two other reasons. One is the "absorption" approach, which begins with the observation that from national income accounting we know that a current account deficit is equivalent to an excess of absorption over income. We will now rewrite those identities using our new notation where C, I, G, etc. stand for quantities. Thus each of these has to be multiplied by their price to obtain the relevant identities:

$$Y = PC + PI + PG + PE - PM$$

$$= A + CAB.$$

Therefore, a reduction in the current account deficit should be reflected in either an increase in income or a decrease in absorption. Yet, there is nothing in the elasticities approach that guarantees either. Indeed, it is possible that in domestic currency terms, the current account deficit may widen. Note that even if M falls and E rises from the devaluation, since P has risen (recall that $P = eP^*$), the term PE - PM may actually have declined, i.e., the deficit has worsened in domestic currency. Unless some reduction in absorption occurs on the domestic side (a reduction in government spending, say), the deficit will not be turned into a surplus.

How is it possible to achieve a deficit reduction in foreign currency but not in domestic currency? Because a devaluation raises domestic prices relative to foreign ones, it raises the peso value of the deficit. So a smaller dollar deficit is still a larger peso deficit.

This points out a recurrent feature of devaluations. You may be able to achieve balance of payments stability (i.e., a lower dollar deficit), but only at the expense of inflation. Put another way, a country cannot achieve two targets -- balance of trade and price stability -- with one instrument -- the exchange rate. If, however, the devaluation is accompanied by an absorption-reducing program (lower government consumption, say), then the twin goals may be achieved simultaneously. These two

policies are typically referred to as expenditure-switching and expenditure-changing policies.

That a devaluation has effects outside the market for foreign exchange through its impact on domestic prices has implications for how we view the analysis above. In fact, the import demand and export supply curves drawn earlier are a bit misleading inasmuch as they assumed that only the domestic import price and domestic export price (respectively) mattered. The truth is that the importer looks at the domestic import price *relative* to other prices in determining his import demand. For example, a consumer will look at the relative price of imported to domestic beer in his purchasing decision. Similarly, an exporter's supply depends not just on the export price in domestic currency but on this *relative* to other prices, specifically prices in the domestic market. Only if prices in the export market rise vis-a-vis domestic prices will he supply more to the export market. Put another way, it is not the nominal but the "real" exchange rate (the relative price of imports and exports to other goods) that matters.

From this line of argument, it follows that if a devaluation has the effect of raising all domestic prices by the same amount, there will be no change in either the quantity imported or exported. If this happens, the devaluation has no effect on the demand for foreign exchange and, hence on the current account balance.

C. The Australian Model

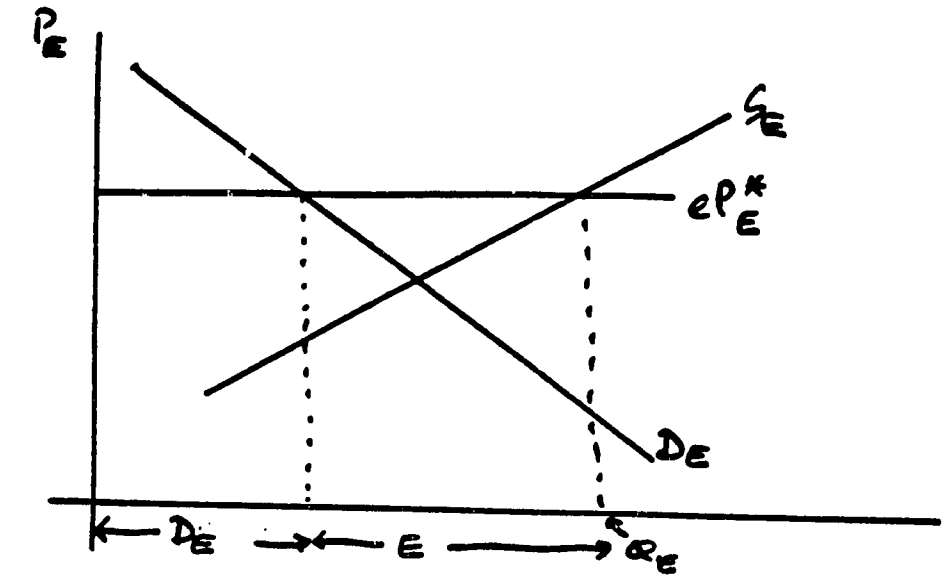
As we saw earlier, a devaluation may have a significant effect on the country's overall price level. Furthermore, the stronger is this effect, the weaker is the devaluation at achieving the objective for which it was intended, namely, reducing the current account deficit. This is because both imports and exports -- whose response to a devaluation was crucial in improving the current account -- also depend on the prices of other goods. For example, an overall increase in prices raises the cost of production, possibly negating the increased competitiveness due to the devaluation. Similarly, if domestic prices rise, imports may not fall by as much after a devaluation, because the substitute goods for imports (domestic goods) are also more expensive.

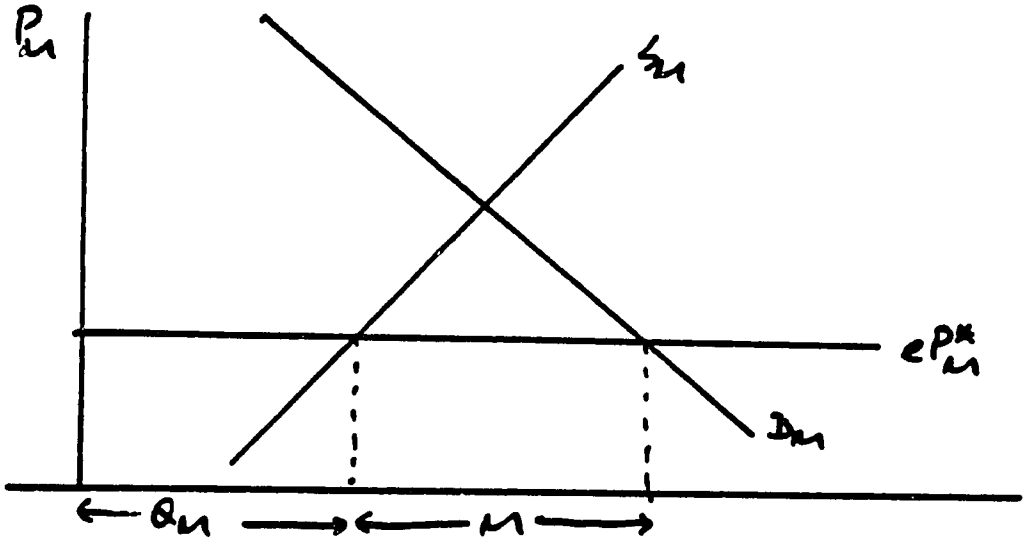
How does a devaluation affect the price level in the economy? According to the above analysis, the price of imports and exports are determined by their world prices (multiplied by the exchange rate) -- the small country assumption. What about prices of other goods? To answer this question, we have to leave the realm of the one-sector model. Up to now, we have been treating all goods as the same (so that their prices move in tandem). However, at the very least, we have to distinguish between those goods which are tradable on the world market and those goods which are bought and sold only within the country, for it is the difference in the way the prices of these two types of goods move that determines the outcome for the trade balance.

We define a traded good as one whose domestic price is determined by world market prices. According to the small country assumption, the price of an exported good is its world market price multiplied by the exchange rate. Now suppose some of this goods is also sold domestically. For example, Thailand exports rice but also consumes it locally. In the absence of government policy, we maintain that the domestic price has to be equal to the world price times the exchange rate. If it were not so, there would always be an incentive to export all or sell all in the domestic market. This can be seen in Figure III-3.

Similarly, for a competitive import, the domestic price must be equal to the world price, in domestic currency.
The only remaining type of good is a nontraded good, whose domestic price is determined by domestic supply and demand conditions. Examples of nontraded goods include services (haircuts, physicians services, etc.), and construction.

To complete the model, we need to specify how the labor market works. For the time being, let us assume that there is full employment (we study the implications of relaxing this assumption later). In that case, associated with the supply (or marginal cost) of the three types of goods are a set of labor demand curves. These are the result of profit-maximizing decisions by the producers of the goods. Note in particular that the curves depend on the price of the good. If the price rises, the demand curve shifts outwards. If we assume perfect labor mobility between sectors, then they all face the same wage rate. The economy's


P_E
S_E
eP_E^*
D_E
D_E
E
Q_E


P_M
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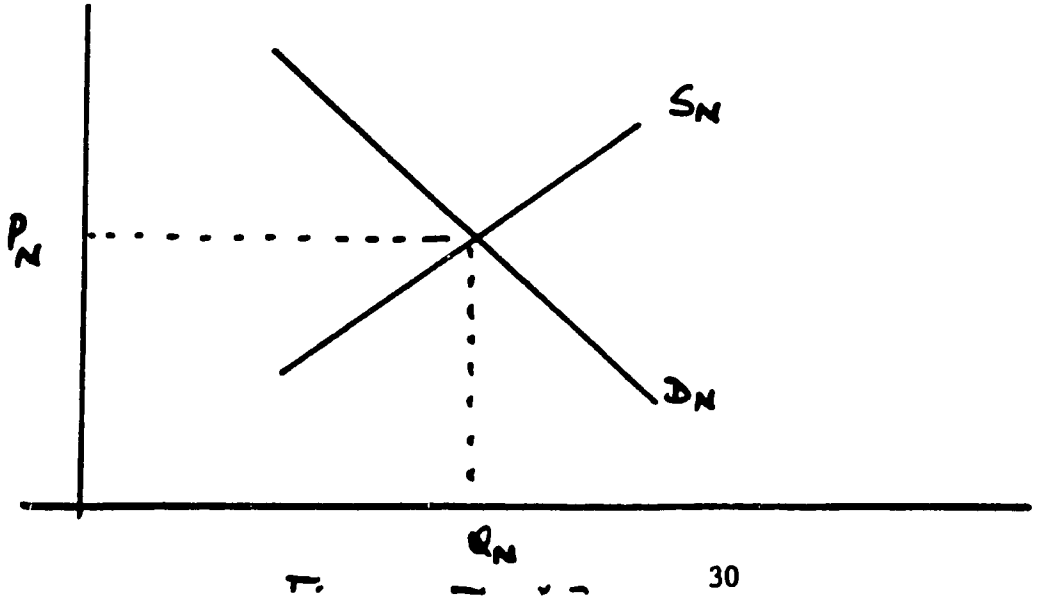
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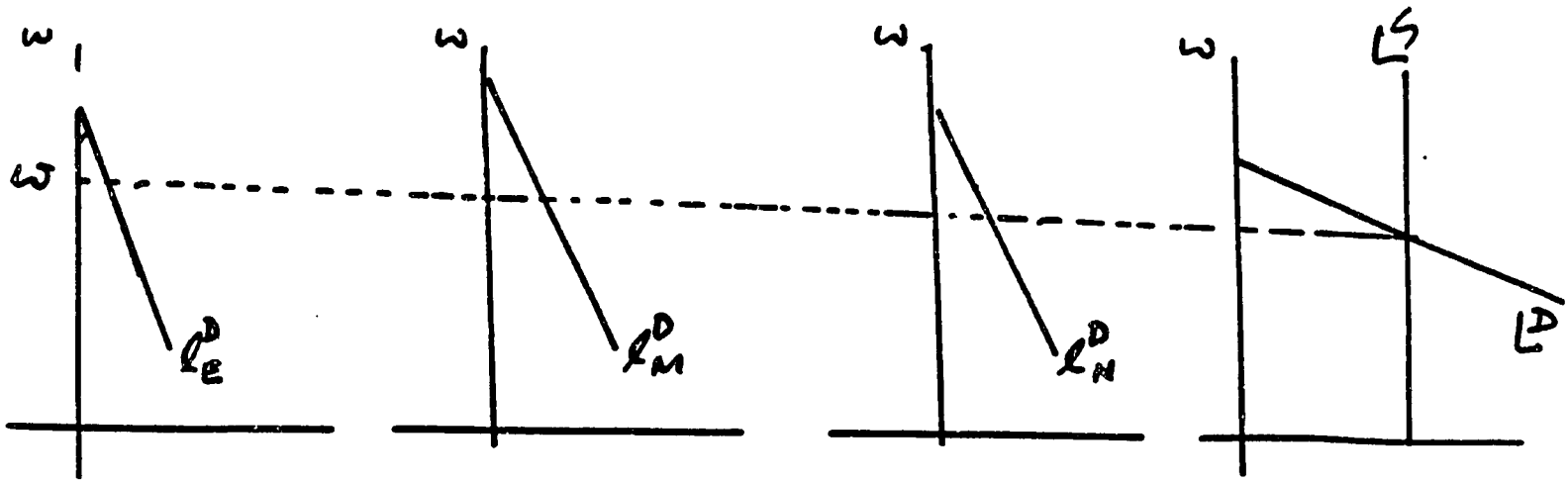

Figure III - 4

labor demand curve is the horizontal sum of these labor demand curves. Finally, we assume labor supply is inelastic. (Figure III-4)

Starting from an initial equilibrium, consider the effects of a devaluation. The two tradable prices rise (in domestic currency). This has the effect of shifting their labor demand curves outward. This bids up the wage rate in the labor market. In turn, this shifts the supply curves inwards, as labor has become more costly. The result is that the initial increase in exports and decrease in imports has been neutralized. Indeed, in this framework, the only way to get an increase in exports or decrease in imports is to lower the wage rate (or some other nontradeable). If we define the real exchange rate as the relative price of tradeables to nontradeables, then in order to improve the trade balance, we need to depreciate the real exchange rate.

To see this, consider the polar extreme case of an economy with a fixed nominal wage and unemployment. In this case, a devaluation will shift the labor demand curves of tradables out, but wages will not rise (by assumption). Then it is possible that exports will increase and imports decrease, thereby improving the trade deficit. Note, however, that even in this case, the increased *employment* will increase demand for nontradeables, raising their price. This, in turn, may increase costs in the traded goods sectors, dampening the initial effect of the devaluation.

What these two cases point out is that a deficit reduction cannot be guaranteed by a devaluation alone. This is why most stabilization programs call for a reduction in government spending or some other component of demand, especially one that is nontradeable intensive (government spending is service-intensive, investment is construction-intensive). An autonomous reduction in demand for nontradeables permits the nontradeable price to fall in the short run. This will then work in the opposite direction of any cost-increasing effects of a devaluation.

This framework is useful for illustrating two other points. First, the structuralist school (led by Lance Taylor) claims that devaluations are contractionary. This can be interpreted as a special case of our model where supply of tradables is inelastic and that of nontradeables perfectly elastic. It follows that a devaluation only leads to higher prices (and lower demand) in the tradable sectors. If nontradeable production is import-intensive, say, then this shifts the nontradeable supply curve up, lowering its output. The result is a higher-priced, lower-output economy (albeit one with a lower current account deficit). The point here is that the structuralist viewpoint is an empirical one: what are the supply elasticities? It is not a different school of thought.

The second illustration we can derive from this framework is that of the "Dutch disease". This the the phenomenon of an increase in the price of an export good and the attendant effect on the tradable and nontradable sectors. The export boom has the effect of a contraction in the importable sector and an increase

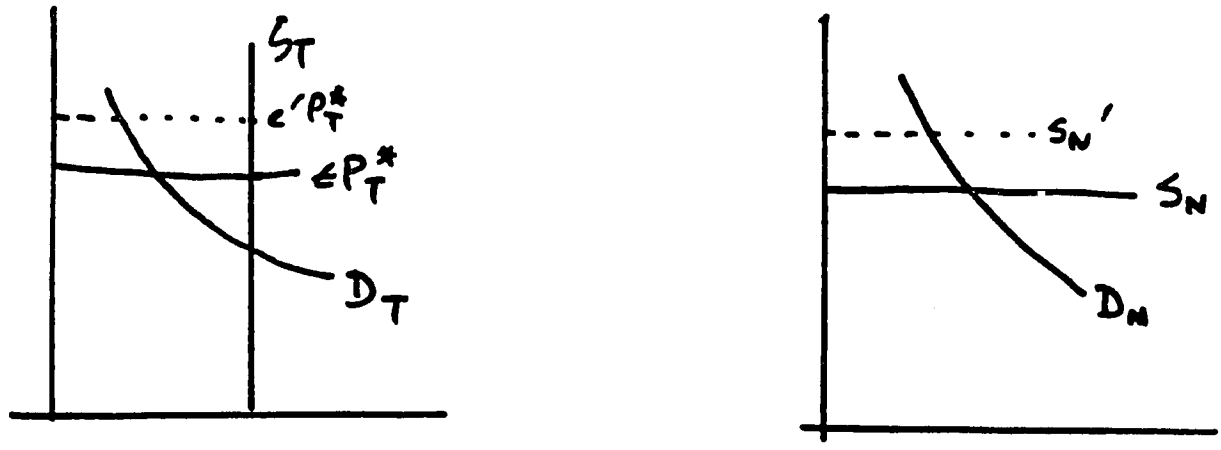

Figure III-5

in the price of the nontradeable sector (output may or may not increase in this sector). This is how we interpret the often-observed phenomenon of an "oil boom" followed by a decline in traditional traded goods producing sectors. In Holland, for example, the manufacturing sector came to a standstill following the discovery of the Groningen natural gas fields. In addition, the nontradeable sectors in these economies also undergo a "boom" : construction costs rise, housing prices go through the roof, etc. Finally, the influx of imports into these countries can be predicted by the decline in competitiveness of the import-substituting sector.

The two-edged-sword nature of a devaluation, and the need for accompanying demand reduction point to the fact that several instruments have to be used for the adjustment process. The general idea can be illustrated simply in a two-sector diagram (Figure III-6). Since their prices are world prices, we can aggregate the tradable sectors into one (X)[1]. Call the nontradeable sector N. Then a deficit can be described as one in which the real exchange rate -- the relative price of tradables to nontradeables -- is overvalued. At the going rate, there is excess demand for traded goods. We can consider two cases: (i) when the real exchange rate is perfectly flexible, and (ii) when it is completely inflexible. Notice that in case (i), the

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[1] To see how this aggregation is possible, define the output of this tradable good, $Q_T = (P_X Q_X + P_M Q_X)/(P_X+P_M)$ and demand for T, $D_T = (P_X D_X + P_M D_M)/(P_X + P_M)$. Then the current account deficit is given by $P_T D_T - P_T Q_T$, or the value of excess demand for tradables.

relative price has to change in the direction of increasing the price of tradeables vis-a-vis nontradeables. That is, the real exchange rate must depreciate. If prices are perfectly flexible in the economy, this can be done without sacrificing output. Note that expenditure still has to fall, however. But the point here is that the real depreciation can be achieved without any devaluation. As long as the expenditure that was cut was in nontradables, the price of nontradables will fall sufficiently that the real exchange rate will have depreciated, even though the nominal exchange rate remained unchanged. Of course, in most cases, the instruments do not permit such a smooth transition. Now consider the opposite extreme, or case (ii). Pressure by labor unions to maintain their real wage, for instance, can slow real depreciation. In this case, demand-reduction will pull the economy inside its production possibility frontier, sacrificing output. The art of structural adjustment is determining where in the region between these two cases the economy will end up. Moreover, this framework points out that if the reason the real exchange rate is rigid has to do with a rigidity in the price of nontradables, then a devaluation may help by raising the price of tradables, thereby achieving the real exchange rate depreciation in another way.

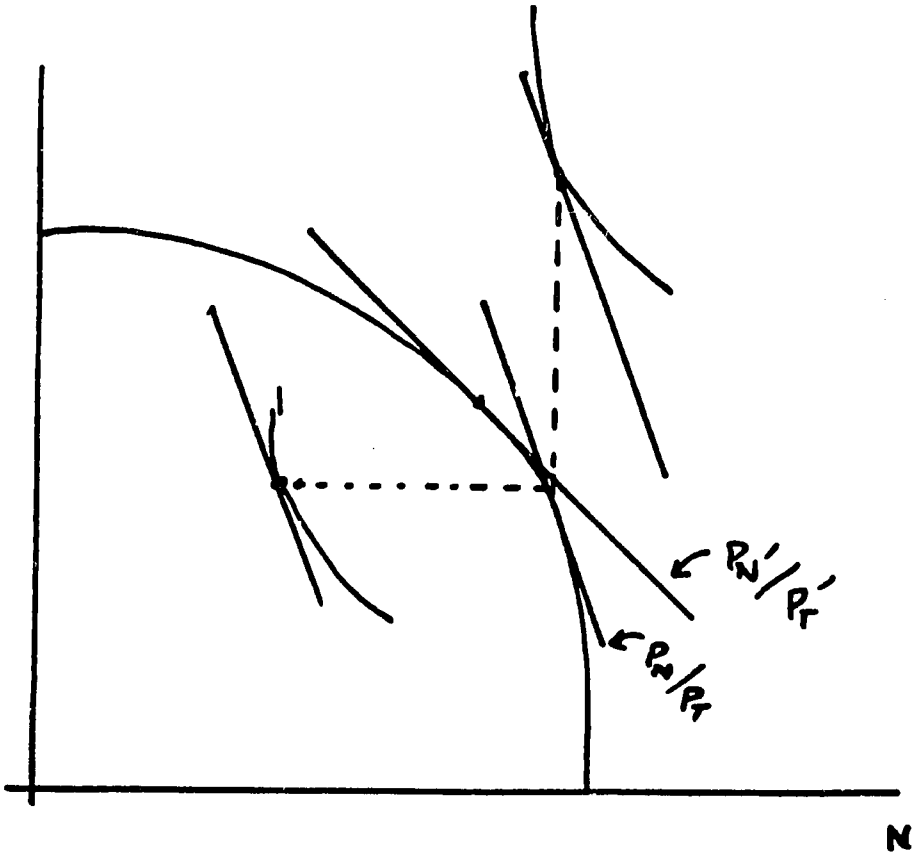


Figure III-6

IV. MONETARY POLICY AND FINANCIAL PROGRAMMING

A. What Is Money, Anyway?

We next turn to the role of monetary policy in stabilization and adjustment in developing countries. Our goals are: (a) to understand how monetary policy can be deployed in pursuit of internal and external balance; (b) to see the links between fiscal and monetary policy; and (b) to understand the determinants of inflation.

So far, the economically relevant concept of the exchange rate has been the "real" exchange rate, P_t/P_n. The nominal exchange rate, e, on its own did not affect anything unless this relative price was somehow changed. The inclusion of monetary aspects in the analysis breathes life into the nominal exchange rate, because as we shall see there is a direct link between a country's money supply and its nominal exchange rate.

First, a few introductory comments about the concept of "money". It is traditional to distinguish among three roles of money.

(a) Unit of account. Money allows us to value different commodities in a common unit. This in itself has no economic significance, because the world would not look any different if we all suddenly decided to use, say, steel or Japanese cars as the unit of account. Then we would say "my annual salary is 25 tons of steel" or "4 Hondas".

(b) Medium of Transaction. Money facilitates transactions because everyone accepts money. If I were paid in Hondas, my employer would have a tough time depositing a third of a Honda in my bank account every month, and I would have an even tougher time exchanging it for groceries. What distinguishes money from other commodities and assets, then, is its liquidity (i.e., ease of

transforming it into other commodities and assets). This motive for "holding" money is an economically significant one, because it creates a "demand" for money. The more economic transactions (purchases, sales) we plan to carry out the more money we need. This allows the government, when it has control over the money supply, to influence the level of activity in the economy.

(c) Store of value. We can also think of money as being an asset just like any other (bonds, real estate, gold, etc.). Holding money is a form of saving, just as a purchase of stocks or government bonds is. All these assets yield a return to the owner: bonds pay interest, gold (it is hoped) appreciates in value. Money also has a rate of return: checking deposits earn interest, and cash has a negative (real) rate of return which equals the inflation rate. The opportunity cost of holding money is the yield on alternative assets. The role of money as an asset is also important because once again it creates a demand for money, which is influenced by interest rates and inflation. This is another channel through which monetary policy can affect the functioning of the economy (by influencing interest rates, say).

But what is money? Cash? Checking deposits? Savings deposits? We will look later at different definitions of money. In an economic sense, money is whatever our conceptual framework suggests it ought to be. In these coming pages, for example, we will concentrate on the role of money as a medium of transaction (and ignore its role as a store of value for the time being). In the context of this discussion, then, the relevant concept of money is that of an asset distinguished from others by its liquidity. (Is it liquid? If so, it must be money.) Monetary policy, in turn, is policy that controls the supply of this particular asset.

The key point is that we all need money to make purchases, because that is the only widely acceptable medium of transaction.[1] This can be encapsulated in a simple identity:

(1) $Hv = A$

where H is the aggregate supply of (domestic) money at the disposal of the economy and A is the nominal value of absorption by domestic residents (i.e., C+I+G). The link between H and A is given by v, the velocity of circulation of money. As stated, this is an identity which simply says that the ratio of total expenditures to the money stock yields velocity. In LDCs, v ranges between 3 and 6. Countries with lower v are said to be more monetized or financially "deeper" than others.

Now we turn (1) into a theory of money demand, by asserting that v can be treated as a constant. The way to interpret (1) now is as follows: the economy's demand for money is proportional to the level of expenditures it undertakes. We now write

(2) $H^d = (1/v)A$,

where the superscript d reminds us that this is a demand relationship. Equation (2) represents the "quantity theory of money demand." What about the supply of money? We take that to be controlled directly by the government--we will qualify this later on--and denote it H^s. Equilibrium in the money market requires

1. Note well what this is saying: it doesn't say we have to be rich enough to make all the purchases we desire; it says, regardless of how rich we are, that is regardless of the purchasing power of our earnings, we need money to buy things.

(3) $H^s = H^d$.

B. Monetary Policy in the "Australian" Model

Now we are ready to analyze the role of monetary policy in the small, open economy model we developed in the previous section. We make one simplifying assumption: domestic residents spend a fixed fraction, γ, of their total expenditures on non-traded goods, and the rest, $(1-\gamma)$, on tradables. This allows us to write:

(4) $P_n D_n = \gamma A = \gamma v H^s$

(5) $P_t D_t = (1-\gamma)A = (1-\gamma)vH^s$,

where we have substituted from (2) and (3). These two equations represent the demand side of the economy. (D_n and D_t are the quantities demanded of the two goods.) On the supply side, we know that producers move along a transformation frontier so that the production point is tangent to the relative-price line, the slope of which is P_t/P_n. We can represent this by writing:

(6) $X_n = X_n(\overset{-}{P_t/P_n})$; $\quad X_t = X_t(\overset{+}{P_t/P_n})$.

The parentheses here denote a functional dependence: so we read "X_n is a function of (i.e., depends on) P_t/P_n)". The signs refer to the nature of the relationship. When P_t/P_n increases, X_n falls and X_t rises.

In the best of all possible worlds, we would have simultaneous equilibrium in the non-traded goods market ("internal balance") and in the

tradables market ("external balance"). The conditions for equilibrium are:

(7) $D_n = X_n \Rightarrow (\gamma v H^S)/P_n = X_n(P_t/P_n)$ ..... internal balance

(8) $D_t = X_t + B \Rightarrow [(1-\gamma)vH^S]/P_t = X_t(P_t/P_n) + B$ ... external balance

B refers to foreign borrowing, which we will treat as an exogenous policy choice. Notice that demand for goods depends on what is called "real balances": the supply of money divided by some price index. Monetary policy exerts an influence over the level of domestic demand (and hence domestic expenditures) via its effect on real balances. This is the crucial mechanism that renders monetary policy effective.

Now we will draw a version of the familiar Swan diagram (named after the Australian Trevor Swan), with e (the nominal exchange rate) on the vertical axis, and H^S (the money supply) on the horizontal axis. Remember that e enters P_t through the relationship $P_t = eP_t^*$. The variables on the axes represent our policy instruments: e is our expenditure-switching policy, H^S is our expenditure-changing policy (why?). We will ask what combinations of policies are needed to get us out of economic trouble.

Refer to figure 1. IB is the curve along which internal balance is achieved; i.e., it represents the combinations of e and H^S which maintain the equality in equation (7). To the left of IB, we have excess supply of non-tradables (ESN, "unemployment"), and to the right excess demand for non-tradables (EDN, "inflationary pressure"). The IB curve is downward sloping for the following reason: start from internal balance, and increase H^S slightly; now we have excess demand for non-tradables, and to eliminate it we need to make non-tradables more expensive relative to tradables; this is achieved by reducing e (making tradables less expensive).

Similarly, EB is the combination of points which maintain external balance. It is upwards sloping because the adverse effect of an increase in H^S on external balance has to be offset by a devaluation (increase in e). To the left of EB, we have excess supply of tradables (EST, "surplus in the external accounts"), and to the right excess demand of tradables (EDT, "deficit").

The two curves divide Figure 1 into four quadrants, or "four zones of economic unhappiness":

Zone I: BOP surplus, inflationary pressure;

Zone II: BOP deficit, inflationary presure;

Zone III: BOP deficit, unemployment;

Zone IV: BOP surplus, unemployment.

The appropriate policies depend on which zone we happen to find ourselves in.

We distinguish two types of economies: (i) economies in which wages and prices in the non-tradables sector exhibit a high degree of rigidity so that we cannot take for granted that we are continously on the IB schedule. Many Latin American countries represent examples. (ii) Economies in which wages and prices are fairly flexible in the non-tradables sector, so that internal balance holds (more or less) continuously. Examples may be some African countries (with large informal sectors), Indonesia, and Turkey.

(i) <u>Non-Traded Prices Are Rigid</u>. The correct policy combination can be determined by looking where we are on the diagram. In Zone II, for example, we will need a cut in the money supply and either a fall or rise in e. Similar conclusions can be drawn for the other zones. (Can you figure out why there is always an indeterminacy with respect to one of the policies needed?)

The important message is: we need both policy instruments to attain the bliss point, even when we suffer solely from external disequilibrium. Expenditure-switching and expenditure-changing are both needed.

Another exercise we can do is to consider the effects of a sudden reduction in foreign borrowing opportunities. Suppose we are in equilibrium initially, and that B falls. What does that do to the diagram?

(ii) Non-Tradables Prices are Flexible. We can do the same kind of exercises in this case, bearing in mind that we will now always be on the IB curve. Internal disequilibrium never arises. Exchange rate policy is enough to get us out of trouble on the external front.

Now suppose we are already at external equilibrium. We saw earlier that, when we did not consider the role of monetary policy explicitly, a devaluation had no long-run effects on the economy. An increase in e led to a proportionate increase in P^n, with no change in either the trade balance or the internal balance. Does this logic work here as well?

Since P_n is flexible, we are always on the IB schedule. The effects of a devaluation ($\Delta e > 0$) are displayed in figure 2. We start from initial equilibrium 0. The devaluation takes us to a point like 1. At 1, we have EDN and inflationary pressure, so P_n must rise to eliminate the internal disequilibrium. As P_n rises, EB and IB will both shift. (Remember that IB and EB are drawn for a given P_n--the analogy is a with a shift in a demand curve.) IB shifts to IB' where the internal disequilibrium is eliminated--that is the objective of the increase in P_n.

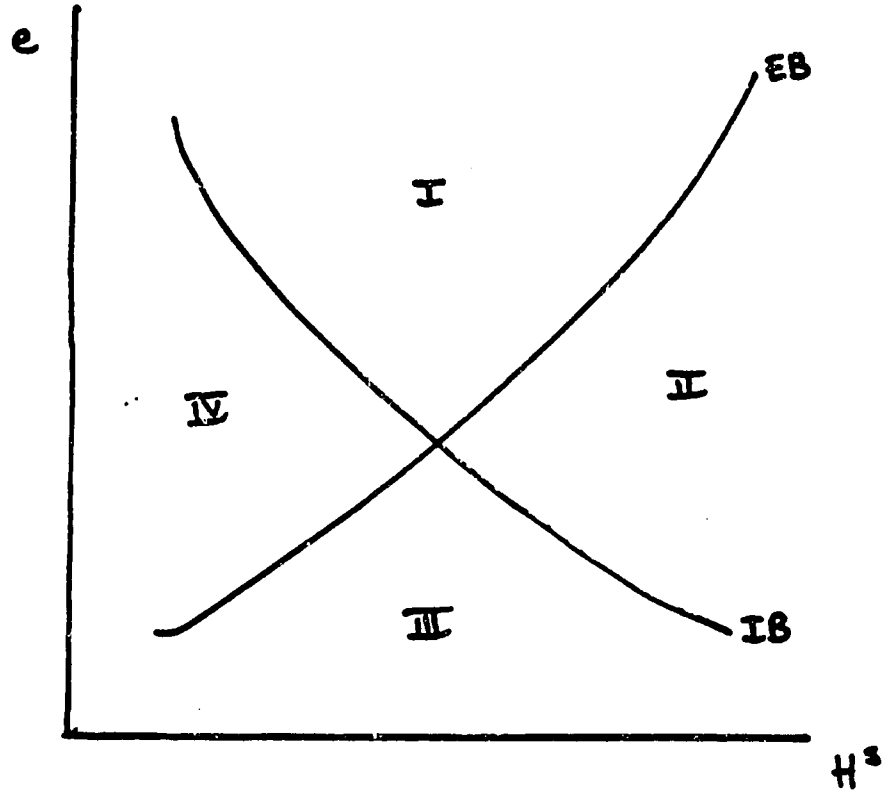
How about EB? As P_n rises, EB will shift back since some areas with BOP surplus will now become areas with BOP deficit. How far will the shift go?

As long as the increase in P_n is proportionately less than the initial devaluation ($\Delta P_n/P_n < \Delta e/e$), we must have a surplus at 1, which implies that the shift in EB leaves point 1 still to the left of the new EB'. In fact, it must be the case that $\Delta P_n/P_n < \Delta e/e$, since from equation (7) internal balance would otherwise not obtain at 1. Therefore, the final outcome is as shown in Figure 2.

Notice that a nominal devaluation has now led to a real devaluation. p^n has risen, but not by enough to offset the effects of the devaluation entirely. We end up with a BOP surplus at 1. A devaluation is effective even when domestic prices are perfectly flexible.

But the devaluation is effective in this context only because the nominal money supply is being held constant. Since prices are rising, this implies a fall in the real money supply, and therefore a squeeze on real balances. Holding the nominal money supply constant is tantamount in this case to a contractionary monetary policy. The devaluation works because real balances fall, and the implied reduction in aggregate expenditures leaves room for a BOP surplus. Hence exchange rate policy can work not only through its expenditure-switching effect (by altering relative prices), but also through its expenditure-reduction effect.

Figure 1



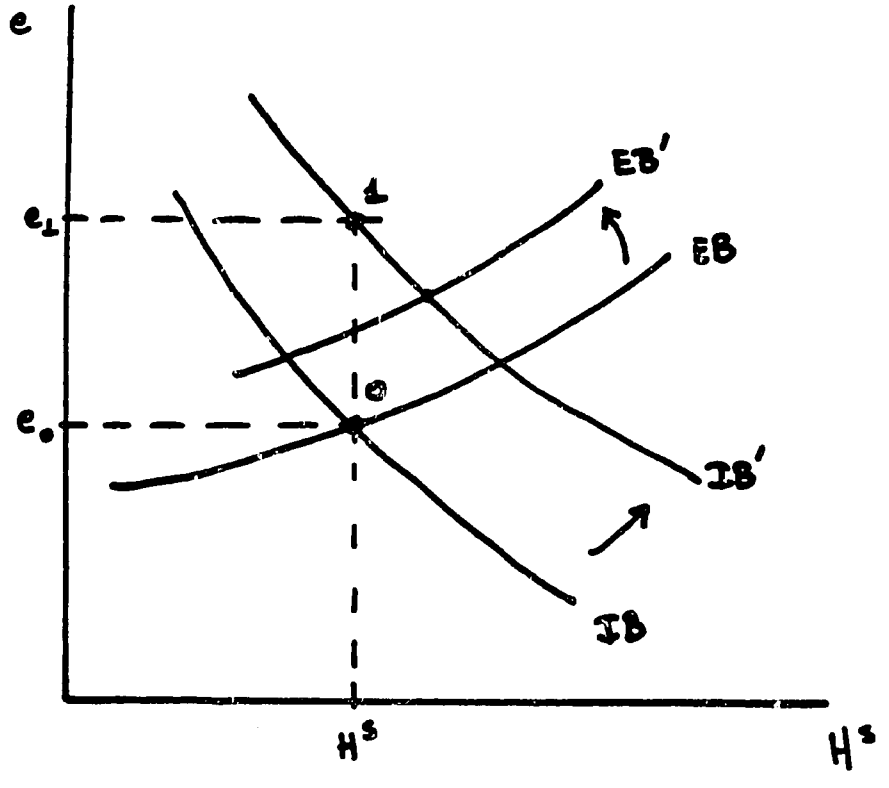


Figure 2

C. A Closer Look At Money and Monetary Policy

So far, we have been vague about which monetary aggregate we were talking about. What is M1? M2? Monetary base? Two key questions help us distinguish between different conceptions of money:

(a) How liquid? Monetary aggregates can be classified according to their degree of liquidity. Cash is more liquid than demand deposits, which are in turn more liquid than savings deposits. So we can define, in decreasing order of liquidity, three monetary aggregates:

Cash (or currency in circulation)

M1 (cash plus demand or checking deposits)

M2 (M1 plus savings deposits).

In some LDCs, commercial banks are allowed to accept deposits denominated in foreign currency (which is sometimes referred to as dollarization). Then monetary aggregates inclusive of the relevant foreign-currency deposits can also be defined (e.g., M1X, M2X). [Question: which monetary aggregate is the one most closely suited to the model just analyzed?]

(b) Who creates it? From the standpoint of economic policy, this is sometimes the more relevant question. In its broadest sense, money can be defined as the liability of a country's banking sector; that is, money is created by the banking sector. Frequently, it is useful to separate the Central Bank (part of the government's policy-making machinery) from the rest of the banking sector (the deposit money banks, in IMF parlance). That part of the money supply which is the liability of the Central Bank is then called "base money". Other names for base money include "reserve money", "high powered money", or

the "monetary base".

Our discussion of monetary policy will focus on base money for two essential reasons: (i) base money is the only aggregate that the government can directly control, provided it can control any at all: and (ii) the government generates revenue (called "seignorage") by issuing base money, about which more later.

Now let us look at the balance sheet of the central bank more closely. In schematic form:

A	L
NFA	RR
DC	C

RR: required reserves of DMBs
C: currency in circulation
NFA: net foreign assets (foreign exchange reserves minus foreign liabilities of the CB)
DC: (stock of) domestic credit extended by CB

We define the monetary base (MB) as the liabilities of the central bank (or more broadly of the monetary authorities). Since liabilities must be balanced by assets, this gives us a fundamental identity:

(1) $MB \equiv NFA + DC \equiv RR + C$.

Hence, base money can increase only insofar as either the net foreign assets of the CB increase, or its stock of domestic credit increases. (DC can also be broken down into domestic credit extended to the government and domestic credit extended to the private sector.) Note also that MB, NFA, and DC are all <u>stocks</u>, and not flows; that is, they are quantities measured at an instant in time--e.g., 5pm on December 31st, 1989--rather than over a period of time. (Income, savings, and investment are all flow variables as they are measured over a month, quarter, or year. It does not make sense to ask "what was your

income last saturday at 9 am?")

Examples of money creation:

(i) Government borrows from the Central Bank. This is the predominant method of money creation in LDCs. To cover its expenditures, the government sells IOUs to the Central Bank which typically rolls them over forever, in return for which the Central Bank issues base money (currency or a check drawn on itself). H and DC both go up.

(ii) Balance-of-Payment surplus. A similar mechanism operates when the country runs a BOP surplus, and accumulates foreign reserves as a consequence. NFA and MB both go up. (The mechanism in practice may be something like the following: A textile exporter earns foreign exchange which he would like to convert to national currency. He sells the foreign exchange to the Central Bank--the NFA of which thereby go up--and receives newly printed domestic currency in exchange.) Conversely, when a balance-of-payments deficit is financed by running down reserves, the monetary base shrinks.

The last point is important, and establishes a very important link between the balance-of-payments and the domestic money supply. A country that is running a deficit in the BOP (in the sense of running down reserves) is also involuntarily shrinking its domestic money supply. A surplus country is expanding its money supply.

We will return to this central identity regarding base money in a moment. Let us now see how base money is related to broader conceptions of money, and what the role of commercial banks is.

The balance sheet of a typical commercial bank looks like the following:

A	L
RR	D
Loans	

RR: required reserves of DMBs
D: deposits

Notice that the required reserves held at the Central Bank are part of the commercial banks' assets. The stock of credit (loans) constitutes the other component on the asset side. When commercial banks also hold foreign assets, we would have to include it on the asset side. Deposits are in turn the banks' liabilities.

Broad money (or M2) is simply the aggregate liability of the banking sector. To see what it amounts to, we consolidate the balance sheets of the central bank and commercial banks (displayed above), to get:

A	L
NFA	D
total domestic credit	C

Notice that required reserves (RR) have dropped out of the picture, since they constitute an asset transaction <u>within</u> the banking sector. Returning to our definition of money as the liability of the banking sector, we can then write the definition of M2 as:

(2) $M2 \equiv D + C$.

This is the definition we have already encountered.

The government can directly control only the monetary base. But the level of activity in an economy is probably more closely linked to broad money. Therefore, we would like to know how the level of MB can influence the level of M2.

M2 and MB are linked by what is called the "money multiplier":

(3) $M2 = \mu MB$,

where μ is the money multiplier. To see why this is called a multiplier, let us introduce two handy definitions:

- c = currency-deposit ratio (i.e., the ratio of currency held in relation to bank deposits, C/D);
- r = reserve-requirement ratio (the ratio of required reserves to bank deposits, RR/D).

The first of these is a behavioral variable; it is determined by individuals' preferences with respect to liquidity as well as the ease of using checks and withdrawing money from bank accounts. (What do you think happened to c in the U.S. after the introduction of automated teller machines?) The second is a policy variable; the government sets reserve requirements which commercial banks have to follow.

Now using (3),

$$\mu = M2/MB = (C + D)/(C + RR),$$

and dividing both numerator and denominator by D,

(4) $\mu = (1 + c)/(r + c)$

which gives us the desired relation between the money multiplier, on the one hand, and the currency-deposit ratio and reserve requirements, on the other. (Question: What happens to μ when c increases? when r increases?) Suppose that the reserve requirement is 20 percent and that individuals hold 10 rupiahs in cash for every 100 rupiahs in their bank account. Then r = 0.20 and c = 0.10, which yields a money multiplier of (1.1/0.3) = 3.67. Therefore, a one rupiah increase in base money will increase broad money by 3.67 rupiahs. That is why μ is called a multiplier, and why MB is often referred to as "high-powered" money.[1]

D. The "Automatic" Adjustment Mechanism

The discussion above indicated that the monetary base has two components, net foreign assets and domestic credit. An important implication is that, unless, NFA remains unchanged, H cannot be directly controlled by the monetary authorities. This will become clearer in a second; for the moment, just note that the NFA component renders the monetary base (at least partly) a residual item, insofar as balance-of-payments imbalances impinge on the money supply.

Can the government ever have full control over the monetary base? Yes, if it can avoid balance-of-payments deficits or surpluses. But this in turn requires one of two things involving the exchange rate: either the exchange

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1. The money multiplier is not always larger than one. Sometimes the liabilities of the Central Bank are inflated by additional items like import deposit requirements, in which case MB can exceed M1 or M2. In these cases, whether a unit increase in MB leads to a more than unit increase in M1 or M2 depends on what the source of the increase is. An expansion of credit to the public sector, for example, will still lead to a multiplier process. (Hence, the <u>average</u> and <u>marginal</u> multipliers will differ.)

rate is left to float freely so that balance-of-payments disequilibria never arise, or it is continuously targeted on the balance-of payments. In both cases, the government can in principle have full control over the money supply, because there will never be any BOP deficits or surpluses. The important point is: the money supply and the exchange rate cannot be controlled independently. Any decision made with respect to the money supply implies a particular exchange rate; conversely, any exchange rate stance has direct implications for the money supply. This is why it is often said that monetary policy and exchange rate policy are one and the same thing.

The mechanism that prevents full control over the money supply in the presence of fixed--or insufficiently flexible--exchange rates can be explained as follows. Suppose that DC goes up (say, because the central bank finances a government deficit). The instantaneous effect of this is to increase the money supply. But will money demand increase proportionately? Perhaps yes, perhaps not. Suppose that the demand for money remains unchanged. What will bring the increased supply into equality with unchanged demand? The answer is the balance-of-payments. Enough money will "leak" through the balance of payments to reestablish equilibrium in the money market. This implies that there will be a BOP deficit while the excess demand for money lasts. Once the excess demand is eliminated, so is the BOP deficit. This process is called the automatic adjustment mechanism.

Sounds like magic? Let us now see in greater detail how and why this process works. Our earlier framework will help, so we return to it.

First, let our earlier H refer to broad money. Note from our definition of broad money that $H = \mu(DC + NFA)$. Now we can restate our equilibrium conditions for internal and external balance, respectively:

(5) $\gamma\nu\mu(DC + NFA)/P_n = X_n(P_t/P_n)$ ..... IB

(6) $(1-\gamma)\nu\mu(DC + NFA)/P_t = X_t(P_t/P_n) + B$ ..... EB

(These come from equations [7] and [8] from the previous section.) Finally, we make use of the extra bit of knowledge we have just acquired, by expressing the link between the balance of payments and the money supply:

(7) $\Delta NFA = P_t(X_t + B - D_t)$.

Make sure you understand what this equation says. The right-hand side equals the balance of payments position: it is positive when there is a surplus, and negative when there is a deficit. As long as the BOP is non-zero, the stock of NFA must be changing through reserve accumulation (surplus) or decumulation (deficit). The NFA component of the money stock is constant only when the balance-of-payments is in equilibrium. Now we are ready to consider:

<u>The Effects of Expansionary Monetary Policy</u>. Refer to Figure 1. Suppose we expand the money supply from H_0 to H_1, by expanding DC. The impact of this is to take us from point 0 to point 1, where we have a BOP deficit. From (7), the NFA must then start to decline, which in turn means that H starts to fall. We start moving horizontally back. How far must H fall? Until the excess demand for money is completely eliminated, that is until the money stock returns to its original level at H_0. The eventual equilibrium is at point 0.

Hence, after the adjustment process is completed, money supply ends up being what it was before. While the composition of H is changed (with larger DC and smaller NFA), its overall level remains the same. Put graphically, the initial addition to the money supply has "leaked" through the balance of

payments. Once the adjustment process is complete, the BOP returns to equilibrium. Refer to Figure 2 for the time paths of reserves, BOP, and H while the adjustment process takes place.

"This is funny," you might say. "Where I come from, balance-of-payments equilibrium is not so easily re-established after expansionary monetary policies!" Yes, but where you come from "expansionary monetary policy" stands for continuous pumping of the printing presses, rather than a one-time increase as the experiment above assumed. When monetary emission keeps running ahead of the demand for money, we must observe economies stuck somewhere between points 0 and 1 in figure 1, with continuous BOP deficits. Continuous, that is, until reserves finally run out.

The Effects of Devaluation. Remember that in the previous section we had looked at the effects of devaluation while holding the money supply constant. In that case, devaluation had led to an increase in the trade balance, but it had done so because we had kept H fixed. Now we can see that this cannot be anything but a short-run equilibrium: the ensuing BOP surplus must set the automatic adjustment mechanism to work. Let us now see how the long-run equilibrium gets re-established.

Refer to Figure 3. We had left the story at point 1, with an unchanged money supply and a BOP surplus. Therefore we must have $\Delta NFA > 0$. The money supply increases. We move horizontally towards the right. How is the process completed? We have two possible scenarios depending on how well non-traded goods markets work:

(i) Price of NT-goods is fixed. Since P_n does not respond to the increase in H, both EB and IB schedules are unaffected. We gain reserves

until we reach the EB curve at a point like 2. At 2, the BOP is in equilibrium, so the money supply is stabilized. But we are to the right of the IB schedule, which implies we are left in an overheated, "inflationary pressure" economy (thanks to the expansion of the money supply).

(ii) Price of NT-goods is flexible. Now P_n will increase to eliminate excess demand for NT-goods. This moves the IB to schedule to the right, and the EB schedule to the left (make sure you see why). The final equilibrium is at a point like 3 where internal and external balance are reattained.[2]

Notice that in both cases, devaluation has only transitory effects on the BOP. These transitory effects are undone by the compensating movements in the money supply.

Wait a second. Does this mean that devaluation is ineffective as a policy instrument? The answer is a big NO. You will see why in a a second. But truth-in-advertising requires that you be warned: there are people (smart people) who believe that exchange-rate policy is for the birds--precisely because of the reasoning just followed. These people are called Ron McKinnon and Bob Mundell. They think governments should fix their exchange rates and forget about exchange-rate policy. All that governments have to do is stick to "sensible" read "conservative" monetary policies.

When P_n is sufficiently flexible--or when labor markets work well--these people are of course right: adjustments in P_n (and wages) take care of

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2. Point 3 must lie on a straight line that goes through the origin at a 45-degree angle. Technically speaking, that is because monetary policy is "neutral" when there are no price rigidities in the economy. A 10 percent increase in the money supply increase e and P_n by 10 percent; no real magnitudes are affected.

internal balance, while the automatic adjustment mechanism takes care of external balance. In this view, the governor of the Central Bank and the Finance Minister can put their time to better use than worrying about policy--they can read The Wealth of Nations, for example.

But when P_n is not sufficiently flexible (or domestic labor markets do not work well), the automatic adjustment mechanism cannot be relied upon to achieve our internal and external balance targets simultaneously. We already got a hint of this above. Then the exchange rate has a valuable function to perform. To understand this point, let us go through another simple exercise with our apparatus.

Refer now to Figure 4. Suppose we find ourselves at a point like A, where we have a balance-of payments deficit. (You could think of this as having been brought about by an exogenous reduction in B.) Since $\Delta NFA < 0$, and P_n is assumed inflexible, the automatic adjustment mechanism leads us horizontally to the left until we hit the EB schedule (at point 2), at which point the BOP deficit is eliminated. But notice that we now have a severe unemployment problem (reason: we have used expenditure-reduction only).[3] The appropriate policy response, of course, is to complement the reduction in the money supply with a devaluation. The latter avoids unemployment.

The lesson is: relying on the automatic adjustment mechanism alone can be very painful when there are wage/price rigidities in the economy.

3. This would have been avioded if P_n could fall; but it cannot by hypothesis.

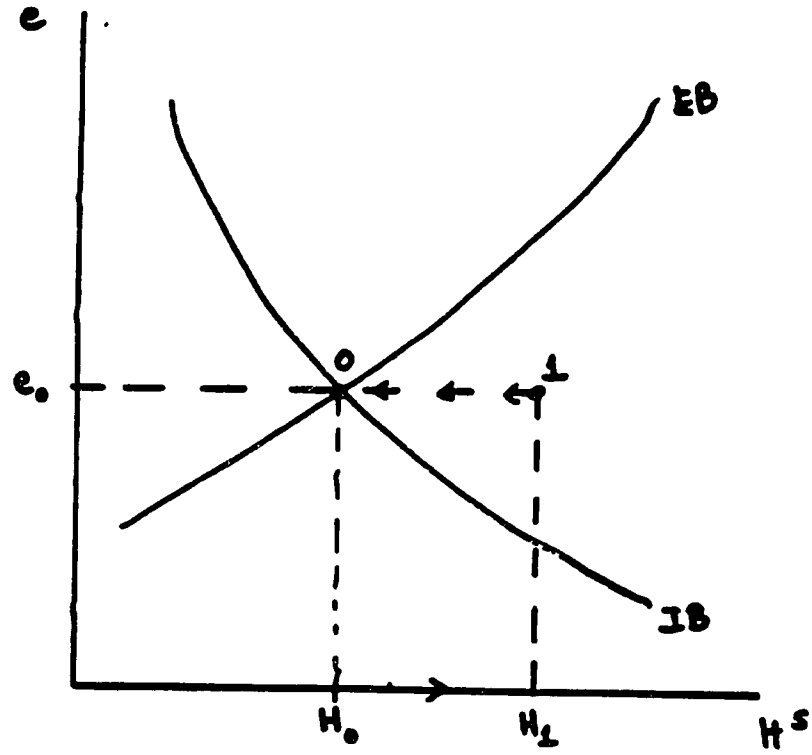

Figure 1

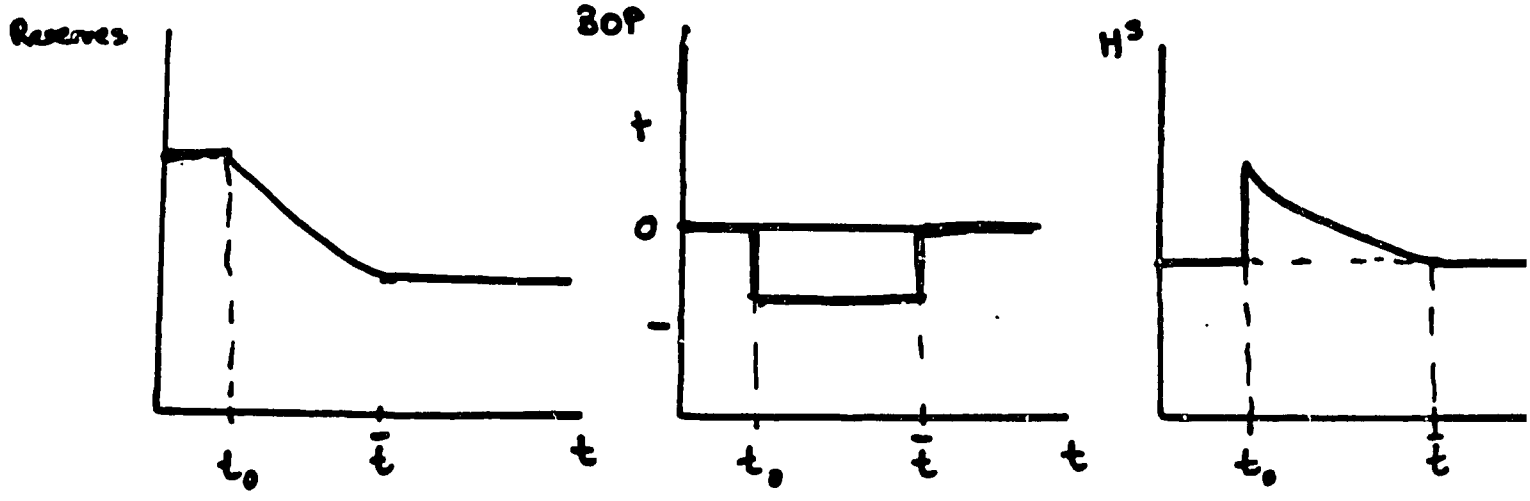

Figure 2

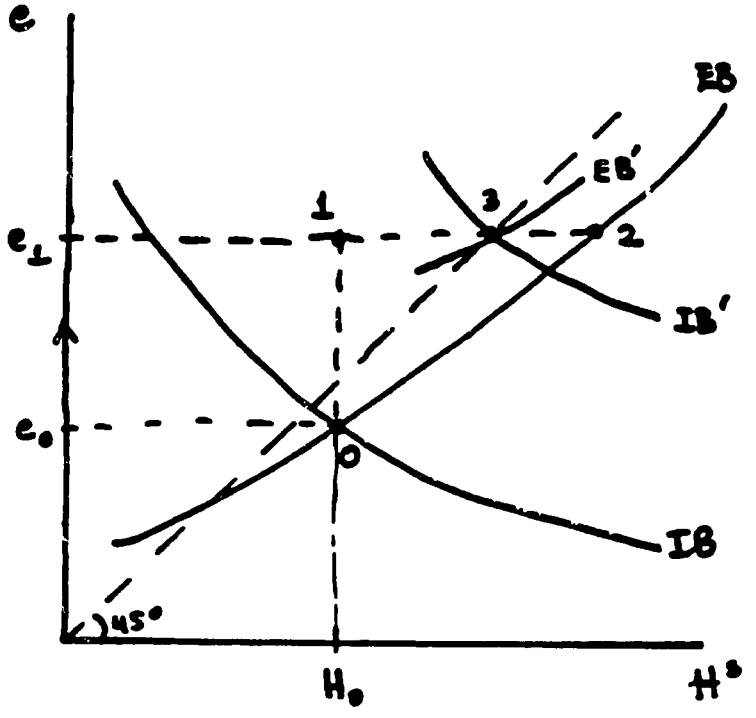

Figure 3

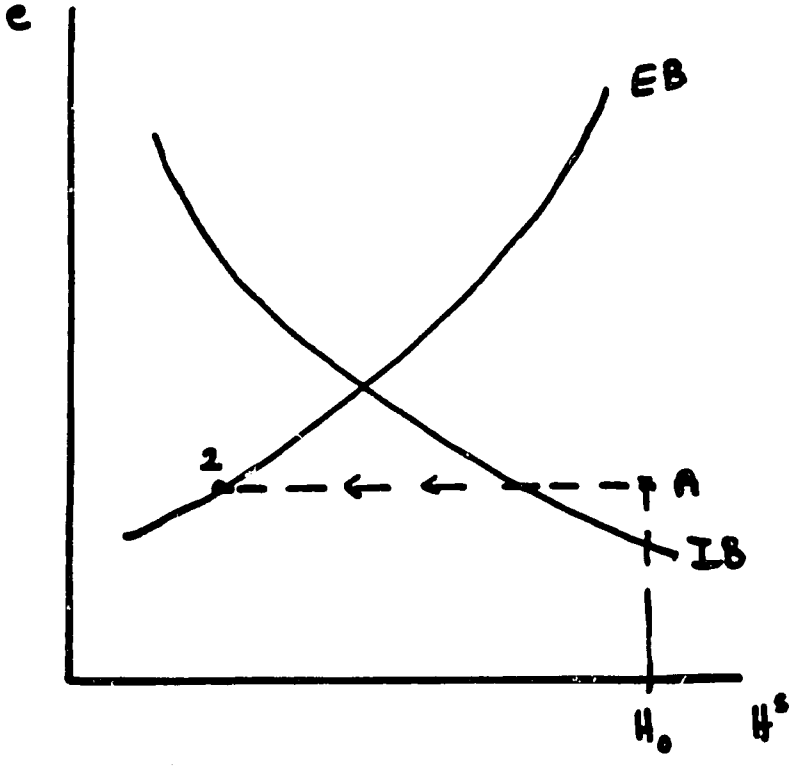

Figure 4

E. The Role of Money As Asset

So far we have been concerned about the role of money solely as a medium of transaction. Now it is time to broaden our horizons and discuss the role of money as an asset. This discussion will also serve to build some understanding of financial markets generally.

Individuals hold their wealth in the form of various assets. Some of these, like real estate and consumer durables, are <u>real</u> or physical assets; others, like bonds, equity, foreign assets, and domestic money, are <u>nominal</u> assets. We can define a real rate of return for each one of these assets. The real rate of return on real assets is simply the rate of inflation, because inflation is the rate at which such assets gain in value. The real rate of return on government bonds is the real rate of interest--the nominal interest on the bond <u>minus</u> the rate of inflation. The real rate of return on cash is always the negative of the inflation rate. Finally, the real return on bank deposits is the real rate of interest on such deposits.

Viewed in this fashion, money is an asset just like another. Therefore we can think of individuals having a <u>demand for money</u> based on the rates of return on money and other alternative assets. In its most general form, we can express a demand function for money in the following way:

$$(1)\quad H^d/P = h(\overset{+}{i_d},\ \overset{-}{i_g},\ \overset{-}{i^*+\dot{e}^e},\ \ldots,\ \overset{-}{\pi^e},\ \overset{+}{y}),$$

where i_d = (nominal) interest rate on bank deposits;

i_g = (nominal) interest rate on government bonds;

i^* = foreign (dollar) interest rate;

$\dot{e}^e$ = expected rate of depreciation of the home currency;

π^e = expected rate of inflation; and

y = real income.

Equation (1) expresses the demand for real balances (or the real money supply) as a function of a number of variables. These variables and their role will be explained in a moment. For now, notice that the sign above each variable refers to the nature of the relationship between the relevant variable and money demand: an increase in i_d increases money demand; an increase in i_g reduces money demand; and so forth.

Notice that real income (y) is included as an explanatory variable in the demand function for money. This is done to capture the transactions motive which has served as the centerpiece of the analysis so far. Real income serves here as a proxy for the level of real transactions households desire to carry out. (Earlier, we had linked money demand to <u>expenditures</u> rather than to income; we can do that here as well. But I am using y now because that is the traditional way that the money demand function is stated.) The higher the level of real income, the greater the demand for real balances.[1]

Now let us look closer at each of the variables.

<u>Interest rate on bank deposits</u>. The reason why this variable influences money demand is clear. If the interest rate on bank deposits goes up, holding

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1. The quantity theory of money demand, with which we worked earlier, posits a one-for-one relationship between money demand and income. A 10 percent increase in income leads to a 10 percent increase in desired money balances. (This is called the unitary elasticity of income demand, for obvious reasons.) Equation (1), by contrast is more general: it posits a positive relationship without specifying any particular functional form or an elasticity.

everything else constant, we will want to hold more bank deposits. As deposits are part of the money supply, demand for money should go up (unless, of course, we switch out of cash one-for-one, in which case aggregate money demand remains unchanged). Empirical evidence from a wide range of countries demonstrates that the demand for M2 is indeed strongly and positively related to interest rates on savings deposits.

Interest rate on government bonds. Government bonds are an alternative asset to money. Therefore i_g serves as one of the opportunity costs of money. When i_g increases (again, holding all else constant) we expect people to want to hold less money. Only in few developing countries is there a thick market for government bonds, so the empirical backing for this proposition is not as strong as in the previous case.

Return on foreign assets. Foreign assets play a role similar to that of government bonds. In some LDCs, the government allows households to hold dollar assets (bank deposits denominated in foreign currencies, or outright foreign investment). Even when there are restrictions, however, the presence of black markets in currencies allows households to diversify their assets illicitly across different currencies. Notice that the (nominal) return to foreign assets is written as $i^*+\dot{e}^e$: it is the sum of the foreign interest rate with the expected rate of depreciation of the home currency. This implies that an expectation of devaluation increases the attractiveness of foreign assets, just as an increase in the foreign interest rate would. This

is a very important point, so let us take a moment to see why.

Suppose you have 100 pesos worth of savings. You have two choices: you can place your savings either in domestic assets (which earn the interest rate i) or in foreign assets (which earn i^* in dollar terms). Let us look at the profitability of each investment. If you purchase domestic assets, at the end of the year you will be left with 100(1+i) pesos. If you purchase foreign assets, on the other hand, you have to do a number of things. First, you have to buy dollars so that you can buy the foreign securities: your 100 pesos gets you $100/e_0$ dollars, where e_0 is the peso-dollar exchange rate (pesos per dollar) at the beginning of the year. At the end of the year, you will have $100(1+i^*)/e_0$ dollars in total, which when converted to pesos will yield $100(1+i^*)e_1/e_0$ (with e_1 denoting the year-end exchange rate). Therefore you will choose to hold foreign assets if:

(2) $100(1+i) < 100(1+i^*)e_1/e_0$.

Canceling and rearranging terms, the decision depends on:

(3) $i < (e_1 - e_0)/e_0 + i^*(e_1/e_0)$.

Since $(e_1 - e_0)/e_0 = \dot{e}^e$ by definition, the right-hand side can also be written as:

$$\dot{e}^e + i^*(\dot{e}^e + 1),$$

which equals

$$i^* + \dot{e}^e + i^*\dot{e}^e.$$

The relevant return to foreign assets, then, is given by the sum of three

terms: (i) the foreign interest rate; (ii) the expected rate of depreciation of the home currency (the "capital gains" on holding foreign assets); and (iii) an interaction term. With i^* and $\dot{e}^e$ on the order of 10 percent, the interaction term is of the order of 1 percent, and is therefore usually ignored. This leaves us with the sum of two terms included in equation (1).

Now we see why capital flight is accelerated when rumors of a devaluation become widespread. We also see why such rumors can put upward pressure on domestic interest rates (and why interest rates remain very high in countries which have apparently stabilized their economies, but where the private sector has relatively little faith in the stabilization program. Sometimes the rumors can be self-fulfilling: A deteriorating BOP position due to capital flight may force the authorities to devalue the currency. Notice an important point that is frequently missed in journalistic discussions: it is not a devaluation per se but its anticipation that generates capital flight and puts pressure on domestic interest rates.

Expected inflation. The discussion above listed a number of nominal assets and their respective yields. The portfolio decision between money and other nominal assets depends on the structure of nominal yields. But there is another margin of subtitution: that between nominal assets (as a group) and real assets. Here the expected rate of inflation (π^e) plays the critical role. The higher the expected inflation, the faster does the value of money erode, and the less of it we would want to hold. That is why π^e enters the money demand function with a negative sign.

Another pitfall to avoid here is the confusion between the price level and the inflation rate. The latter is the rate of change of the former. When

prices rise continuously, two simultaneous and opposite effects operate on money demand: (i) On the one hand, since the level of prices is increasing, the transactions demand for money is also rising: When prices rise, we need to hold more money to undertake the same amount of real expenditures. (ii) On the other hand, inflation erodes the purchasing power of money, so that people switch from nominal to real assets. The first of these effects is captured by the price index in the denominator on the left-hand side of (1). The second is captured by the π^e term inside the function. These conflicting effects will become crucial when we discuss the theory of seignorage later.

So much for our conceptual discussion of money demand. One useful application of this framework is financial programming, where estimating the likely trends in money demand is a central part of the analysis. The other is the monetarist theory of inflation, which stresses excess supply of money (i.e., an excess of supply over demand) as the proximate cause of inflation. We will have more to say about each of these.

Table 1 displays the results of an empirical application of a money demand framework to Turkey. Three categories of money are distinguished: currency, demand deposits, and time deposits. The results are broadly consistent with the discussion above. (Throughout this period, Turkish residents did not have access to foreign assets, so the role of foreign interest rates and exchange rate expectations is omitted from the estimation.) Notice in particular the strong negative effect of expected inflation[2] on real

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2. Empirical studies measure expected inflation in a number of ways. One method is to use the realized future inflation rate by appeal to some strong form of "rational expectations". Another is to use past inflation (the "static" expectations case). Finally, one can estimate an inflation equation econometrically, and use the predicted values from this.

money demand.

Interest rate determination. Another way that the above framework can be put to use is in thinking about how domestic interest rates are determined. Interest rates are important to an economy for a number of reasons: (i) the level of interest rates influences expenditure on investment goods and consumer durables--one way to choke aggregate demand in an economy is to raise interest rates; (ii) for governments with a high stock of domestic debt (e.g. Brazil) the level of interest rates also affects the pressures on the budget.

Earlier we looked at the determinants of money demand. Developments in the market for government bonds were assumed to influence the money market through the interest rate i_g. Now let us look at the market for bonds explicitly. Money market influences will now be transmitted on to the bond market through the money supply (as well as real income). We can then express i_g as a function of a number of determining variables, including the real money supply:

$$(5) \quad i_g = f(H^s/P, \; i^* + e^e, \; \pi^e, \; y).$$

The hypothesized signs can be justified as follows. An increase in the real money supply (holding all other right-hand side variables constant) puts downward pressure on interest rates because the public can be made to willingly hold the additional money only if its opportunity cost (i_g) falls. An increase in foreign interest rates will increase domestic rates because

Table 2. *Results of General Interest Rate Model*

Country and Period	Constant (β_0)	Foreign Interest Rate[1] (β_1)	Real Income − Lagged Real Money Balances ($\beta_2 = \beta_3$)	Expected Inflation (β_4)	Lagged Interest Rate (β_5)	R^2	*DW*	*H*
Colombia (1968–82)[2]	−0.189	0.353	0.303	0.256	0.484	0.820	—	−1.29
	(3.08)	(1.98)	(3.03)	(2.00)	(3.89)			
	−0.326	0.786	0.517	0.422	—	0.768	1.41	—
	(5.78)	(4.99)	(5.49)	(3.11)				
Singapore (1976–83)[2]	−0.200	0.922	0.052	0.026	0.001	0.991	—	0.39
	(0.20)	(23.68)	(0.24)	(1.40)	(0.02)			
	−0.203	0.923	0.053	0.026	—	0.991	1.83	—
	(0.21)	(39.62)	(0.25)	(1.42)				

Note: The values reported in parentheses are *t*-ratios; R^2 is the coefficient of determination; *DW* is the Durbin-Watson test statistic; and *H* is the Durbin statistic for serial correlation in a model with lagged dependent variables.

[1] Adjusted for expected exchange rate change.

[2] From the third quarter through the fourth quarter of the years indicated.

From: IMFSP, September 1985

otherwise there would be mass exodus out of domestic assets. An increase in expected inflation will also increase i_g because savers will want to be compensated for inflation ("the Fisher effect"). Finally, an increase in real income can be expected to increase interest rates because of the induced increase in money demand which (given a constant money supply) has to be offset by higher i_g. (Should we include other determinants? What about the stock of government bonds?)

Table 2 provides some empirical evidence on these financial-market linkages for two countries: Colombia and Singapore. Notice the difference between the two countries. First, in Colombia, foreign interest rates, real income, real money balances, and expected inflation all have important effects on the domestic interest rates in the hypothesized direction. Second, in Singapore only foreign interest rates matter (with an instantaneous, one-for-one response); domestic economic conditions have no influence. The reason is that Singapore is financially a much more open economy than Colombia. Singapore's financial markets are so well-integrated with world capital markets that domestic monetary conditions cannot exercise any independent influence.

F. Financial Programming

We now have all of the apparatus needed to look closely at the type of policy analysis carried out by the IMF. The objective of a typical IMF program is to bring the balance of payments closer to a sustainable position. The analytical exercise carried out in devising the particulars of the program and setting conditionalities is called "financial programming". The intellectual basis of the analysis dates back to the work of Jacques Polak,

long-time research director at the IMF. Since monetary data are generally more widely available and more up-to-date, the analysis is heavily monetary in nature.

Financial programming is rooted in two observations: (i) the proximate cause of BOP deficits is excess supply of money (we have already seen how this works); (ii) the predominant source of money creation in the typical LDC is the monetization of government deficits. From these follows the usual admonishment to cut the budget deficit. The purpose of financial programming is to estimate by how much the deficit should be cut.

Let us distinguish between domestic credit to the private sector (DCP) and the public sector (DCG) as the two constituents of domestic credit on the assets side of the balance sheet of the central bank. The building blocks of financial programming are the following:

(6) $\Delta DCG = G - T$ (the budget deficit is financed by borrowing from CB)

(7) $H^s = NFA + DCG + DCP$ (monetary base identity)

(8) $H^d = Ph(i, y, ..)$ (money demand equation)

(9) $\Delta NFA = \Delta R$ (ΔR = change in reserves, the BOP surplus)

(10) $H^s = H^d$ (money market equilibrium)

Putting these all together we get:

(11) $\Delta R = \Delta H^d - (G - T) - \Delta DCP$.

This links the BOP position to changes in money demand, the budget deficit, and the credit extended to the private sector. Notice how the BOP is treated as the residual that closes the gap between the supply of money and the demand for it. Since we want to know how much to cut the budget deficit, we restate

(11) to get the fundamental equation of financial programming:

(12) $G - T = \Delta H^d - \Delta DCP - \Delta R$.

The typical way that equation (12) is used is as follows. First, a target improvement for the balance of payments. This is ΔR. Then an estimate is made of the private sector's credit needs (ΔDCP); the purpose is to ensure that the private sector is not excessively crowded out during the program. Finally, using a money demand framework similar to the one discussed above, an estimate is made of the increase in money demand (ΔH^d); this will of course depend on various assumptions regarding movements in interest rates, real income, and inflation. The requisite fiscal stance can then be calculated from (12). To implement the program, the IMF will set ceilings on credit extended to the public sector.

Table 1: The Structure of Money Demand in Turkey (1977:I-1986:IV)

	Dependent Variable:		
	log CU/CPI	log DD/CPI	log TD/CPI
Independent variables:			
constant	3.58 (3.10)	8.90 (6.71)	1.30 (1.94)
log y	0.57 (2.42)	-0.55 (2.86)	0.28 (1.02)
i_{TD}	-0.69 (3.67)	-0.96 (7.97)	1.18 (4.61)
i_{DD}	-1.07 (3.01)	0.60 (1.30)	0.38 (1.21)
π^e	-1.51 (3.79)	-2.16 (7.83)	-1.41 (2.41)
lagged dep. var.	0.28 (1.77)	0.24 (2.67)	0.68 (7.48)
R^2	0.83	0.98	0.99

Source: Anand and van Wijnbergen, NBER Working Paper No. 2731, October 1988.

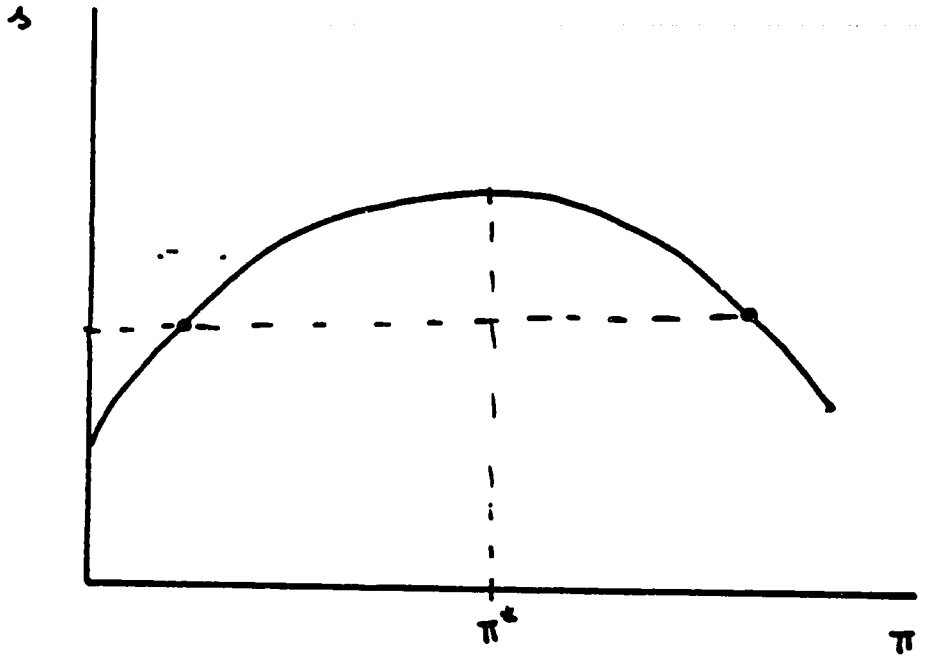

Figure 1

VII. INFLATION: ORTHODOX VERSUS HETERODOX APPROACHES

What causes inflation, and what can governments do to tame it? So far, our approach to inflation has been the "orthodox" one: In our discussion of the Australian model, we said that "inflationary pressure" would result whenever domestic monetary or fiscal policies created excess demand for non-tradable commodities. This is the classical, orthodox view of inflation. Simply put, this view identifies inflation with excess demand, or "too much money chasing too few goods". We will now elaborate on this view. But we will also discuss an alternative view which puts much less emphasis on monetary policy as a determinant of inflation. In this latter view--the so-called heterodox approach--inflation is much a more of a cost-push or inertial process, with monetary policy "validating" rather than creating inflation. The two views provide different answers to the question of how to eradicate high and persistent inflation. In both stories the government budget plays a key role, so we start there.

A. Fiscal Deficits, Seignorage, and the Inflation Tax

In the orthodox view, inflation is created by increasing the money supply too rapidly. That in turn is typically the result of the monetization of the government deficit.

Let us first clarify a possible source of confusion. Earlier--when we looked at financial programming for example--we had identified excessive monetization as the culprit for balance-of-payments (BOP) deficits as well. Now, does excessive monetization lead to both inflation and BOP deficits? In practice, the answer is likely to be yes. But it is crucial to bear in mind

that the larger the ensuing BOP deficits, the more the monetary leakage through the BOP, and the lower the resulting inflationary impetus. The typical cycle is as follows:

Stage I The country starts with a lot of foreign reserves. The monetization of government deficits leads to BOP deficits and reduction of reserves. Since the automatic adjustment mechanism is at work, compensating for the increase in DC with a decrease in NFA, the ultimate increase in the monetary base will be small. Inflation is not a major problem.

Stage II The country runs out of reserves. So NFA cannot fall any further. Excess liquidity is doomed to remain bottled up in the country. This will necessitate one of two things: (a) either the government will start to depreciate the nominal exchange rate alongside the increase in MB, or (b) the government keeps the official exchange rate fixed, and allocates the scarce currency. In both cases, inflation will be the result: in the first, we will experience open inflation (as a result of ongoing currency depreciation); in the second, we will have repressed inflation (on account of shortages and black markets).

Now let us take a closer look at how government deficits are financed. Let D denote the government deficit (G-T), B the stock of domestic debt issued by the government, B^* the stock of the government's foreign debt (in dollars), and DC the domestic credit issued by the Central Bank to the government. Then the government deficit must equal

$$(1) \quad D = \Delta B + e\Delta B^* + \Delta DC,$$

where Δ is the first-difference operator (i.e., $\Delta B = B_t - B_{t-1}$), and e the

where Δ is the first-difference operator (i.e., $\Delta B = B_t - B_{t-1}$), and e the (nominal) exchange rate. This equation states that a budget deficit can be financed in one of three ways: (i) by borrowing from the domestic private sector; (ii) by borrowing abroad; and (iii) by borrowing from the Central Bank. Since $\Delta DC = \Delta MB - \Delta NFA$, we can also write this as:

$$(2) \quad D = \Delta B + e(\Delta B^* - \Delta NFA^*) + \Delta MB,$$

(ΔNFA^* is the increase in the Central Bank's net foreign assets in dollar terms.) Notice that the second term on the right-hand side has now become the increase in the public sector's aggregate net foreign liabilities.

Equation (2) makes clear that the creation of base money is a source of financing for public sector deficits. The revenues derived thereby are called seignorage. Financing a deficit by printing money differs from regular borrowing in one key respect: the government does not have to pay interest on base money.[1]

Now, under fixed exchange rates, when the government tries to increase MB beyond the increase in money demand, we know that the result will be a commensurate decrease in NFA, with ultimately only a small effect on MB. In terms of equation (2), the budget deficit will then be financed by foreign borrowing (which a rundown in reserves amounts to) rather than by monetization. This demonstrates that the only countries that can generate seignorage revenues are those that do not commit themselves to fixed exchange rates. Countries like Panama, Liberia, Senegal, and Cote d'Ivoire are members of a currency union, and therefore have sworn off seignorage.[2]

1. Clearly, cash earns no interest. Required reserves of commercial banks also typically earn only a symbolic interest.

To gauge the magnitude of seignorage revenues, it is useful to express them as a share of GDP: $\Delta MB/GDP$. Further, letting m denote the ratio of base money to GDP and $\hat{H}$ ($= \Delta MB/MB$) the rate of increase of base money:

(3) $\Delta MB/GDP = (MB/GDP)(\Delta MB/MB) = m\hat{H}$.

Hence, the magnitude of seignorage depends on two things: (i) the rate at which base money expands; and (ii) the level of monetization of the economy, i.e., the base-money-to-GDP ratio. For LDCs, seignorage typically amounts to between 1 and 4 percent of GDP annually, so it is not negligible. (If $m = 0.20$ and $\hat{H} = .10$, seignorage revenues will amount to 2 percent of GDP.)

This sounds like a perpetual motion machine! Can we run as large a deficit as we like, resting assured that seignorage can always be relied on to finance it? The answer is no. As explained above, continuous monetization will create excess demand both for traded and nontraded goods, calling for increases in their prices (i.e., depreciation of the nominal exchange rate and increase in P_n). The ensuing inflation limits the extent to which seignorage can be exploited. This is true in two senses: (i) The higher $\hat{H}$, the higher the inflation rate, and to the extent that the government perceives inflation to be inherently undesirable it will not abuse the seignorage privilege beyond a certain point. (ii) But even when the government doesn't care about the inflation rate per se, inflation will set off a process of flight from money

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2. You may ask why would governments give up a source of revenue by voluntarily restricting themselves to a fixed exchange rate. One answer is that this is one way to ensure that inflation never gets out of hand. The currency union ensures that Senegal, for example, has more or less the French inflation rate.

and erosion of the monetary base, putting a ceiling on the amount of seignorage revenues that can be collected. To appreciate this last point, we need to go a bit further in our analysis of seignorage.

Let the demand for the real monetary base be a positive function of real income and a negative function of inflation (actually <u>expected</u> inflation, but we will ignore the distinction). This is a straightforward application of our earlier discussion of money demand. Then, it is possible to state the proportional change in base-money demand in the following fashion:[3]

(4) $\hat{H} = \pi + \sigma n - \mu\Delta\pi$,

where π = rate of inflation,

σ = income elasticity of money demand,

n = rate of growth of real income,

μ = (positive) parameter capturing the sensitivity of money demand to changes in inflation.

Since money-market equilibrium requires equality between money demand and supply, seignorage revenues as a share of GDP (s) can in turn be stated as:

(5) $s = m\sigma n + m\pi - m\mu\Delta\pi$.

The first term here ($m\sigma n$) is called the "non-inflationary component" of seignorage: as real income increases, so does money demand, and the government can generate some seignorage revenues by satisfying this demand at no

3. This is derived from a money demand function of the following sort: $H/P = ky^{\sigma}e^{-\mu\pi}$, where e denotes the base for natural logarithms (e = 2.71828...) and <u>not</u> the exchange rate.

inflationary cost. Hence not all seignorage is inflationary.

The second term ($m\pi$), in turn, is the inflation tax. This is the part that directly causes inflation. When government prints more money than there is demand for it, individuals can be persuaded to hold the additional supply only when the price level rises. This is a tax in the following sense: Suppose I hold 100 pesos of cash, and suddenly prices go up by 10 percent. Everything else being the same, I now need to build up my nominal cash balances by another 10 pesos to remain as "liquid" as before. I could have spent the additional 10 pesos on an economics book; instead inflation has forced me to spend it on more money. The beneficiary is the government, who can now command 10 pesos worth of purchasing power.

The inflation tax is a tax just like another. Some would even argue that it should be displayed explicitly under the current revenues of the public sector, rather than as a financing item in its capital account. Since the inflation tax amounts to $m\pi$, we can term m the "base" of the tax, and π the rate of taxation. Now, as with all taxes, the base tends to erode as the tax rate increases. With the inflation tax, the erosion of the base is due to the flight from money as inflation increases: as discussed earlier, and as equation (4) indicates, real balances are a negative function of the inflation rate. Therefore, it is entirely possible that at high levels of inflation, further increases in base money reduce seignorage revenues as the reduction in m more than offsets the increase in π.

Figure 1 graphs seignorage revenues as a function of the inflation rate. This represents the Laffer curve for the inflation tax. Note that past π^* the government finds itself on the wrong side of the Laffer curve. Note also that

a given amount of inflation tax revenue can be collected at two different rates of inflation, one low and the other high.

The Revenue-Maximizing Inflation Rate. Can we calculate the revenue-maximizing level of inflation? Given our money demand function from footnote 3, we know that $m = kPy^{\sigma-1}e^{-\mu\pi}$. Inflation tax revenue is $m\pi = \pi kPy^{\sigma-1}e^{-\mu\pi}$. Maximizing this expression with respect to π requires taking its derivative with respect to π and setting it equal to zero. This yields the revenue maximizing rate of inflation $\pi = 1/\mu$. All we need to know therefore is the (semi-) elasticity of base-money demand with respect to the inflation rate. The regression results on Turkey discussed earlier suggest that μ might be around 1.5 for that country. A 10 percentage point increase in the inflation rate would decrease real money demand by 15 percent. The revenue-maximizing inflation rate therefore would be 67 percent. This is not a very large number, and suggests that countries can find themselves on the wrong side of the Laffer curve all too easily. Estimates for high inflation countries like Brazil and Argentina suggest that this is likely to be the case presently in those countries.

Other Links Between Budget Deficits and Inflation. Our discussion so far has focused on how budget deficits that are monetized can create inflation, and how the resulting inflation can be viewed as a tax that finances government expenditures. There are two other important linkages between budget deficits and inflation: in both cases, an increase in inflation deteriorates the budget deficit.[4]

(a) The Tanzi effect. Taxes are typically collected with a lag of several months. In the presence of inflation, the real value of tax collection erodes due to these delays. For example, suppose that the annual inflation rate is 100 percent, and that all taxes are collected with a one-year lag. Then the real value of the tax collection will be exactly half of the nominal assessment. By the time the government collects the tax, it is worth only half of what it used to be. More generally, the real value of a tax collection of (nominal) amount T is given by $T/[1 + \pi]^{n/12}$, where π is the annual inflation rate and n is the average lag in tax collection (in months).

(b) Effect on nominal interest rates. As inflation rises, so does the nominal interest rate on government bonds. Therefore the nominal cost of servicing the government's internal debt rises. In high-inflation countries, this effect can greatly deteriorate the measured budget deficits. But it is important to realize that this deterioration is due partly to an accounting shortcoming. The increase in nominal interest payments simply offsets the erosion of the real value of the government's internal indebtedness. So in real terms, the government's budget is not altered. Put differently, the inflation component of interest payments is an accelerated repayment of principal on the government's debt. For that reason, these payments belong more appropriately in the capital account of the government's accounts (see the appendix). Some countries report inflation-corrected budget deficits, in which only the real component of interest payments is shown as a current expenditure.[5]

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4. There is a third effect that operates in the positive direction: bracket creep. With inflation, nominal incomes move into higher tax brackets.

It is important to understand why correcting the budget for inflation makes sense, and when it may be misleading. The public sector deficit is of interest because it tells us how large is the claim placed on the economy's resources by the public sector. Or put differently, the deficit shows the government's contribution to the economy's overal dissaving. Now when the government's interest payments include amortization of principal as well, individuals in the economy realize that not all their interest receipts is a pure addition to their income. Part of it just compensates for the erosion of their wealth by inflation. So rational individuals will fully save the inflation component of their interest earnings, so as to restore their real wealth. That is to say, the inflation component of interest payments made by the government does not amount to an increased claim on the economy's resources, as it will be fully saved by the private sector. In principle, the national accounts will show the government's nominal dis-saving (a larger nominal deficit) being offset one-for-one by larger nominal savings on the part of the private sector. Of course, when individuals have "money illusion" and treat the inflation component as net income, the economy's overall savings will decline.

Recapitulation. Inflation is one consequence of the inability of the government to finance its expenditures through regular taxation and borrowing.

5. Suppose that the nominal interest rate is i and the stock of internal debt is B. Then total interest payments amount to iB. Since the real interest rate is $r = i - \pi$, the inflation-corrected budget deficit would subtract πB from these payments.

In countries with high growth and high degrees of monetization (high m), the inflationary consequences of moderate amounts of money- financed deficits need not be severe. But when monetization is low--because of either the level of income, or the ready availability of substitutes to domestic money (e.g. dollars)--and when the monetary base has been eroded by high and persistent inflation, even small increases in the level of inflationary finance can cause economies to jump into hyperinflation.

The inflation experience of countries like Bolivia, Brazil, Argentina and Mexico during the 1980s can be interpreted from this perspective. In all four cases, large budget deficits were (directly or indirectly) financed by foreign borrowing prior to 1982. When foreign inflows came to a halt, public expenditures could not be reduced quickly. The treasuries resorted to inflationary finance. This created a flight from domestic money. As m fell, the level of inflation required to sustain a given level of seignorage consistently rose. Before long, these countries either crossed the threshold into hyperinflation, or came very close to doing so.

B. The Heterodox Approach to Inflation

If fiscal deficits were all that caused inflation, the policy conclusion would be very simple: Just reduce the fiscal deficit, so that there is no longer any need for inflationary finance. This is the orthodox prescription. Advocates of heterodox programs do agree that budget deficits lie at the origin of high inflation, but they deny that inflation can be easily squeezed out of a system simply by applying brakes on the money supply. Of course, if the monetary squeeze is maintained for a long time, inflation is bound to come

down. But the worry is that this may be too costly in terms of domestic employment and investment, and may not prove sustainable. The crux of the argument is that domestic prices have a life of their own (in the short- to medium-term), independent of monetary policy.[6] Some of the reasons for this are as follows.

Indexation, wage-price contracts, and inertia. In many countries, prices and wages are indexed to past inflation. Such indexation may be explicit (written in labor contracts) or implicit. In either case, the effect of monetary contraction on prices will be felt only gradually.

Exchange-rate passthrough. In many countries, the value of the currency is one of the most closely-watched prices. When the exchange rate is increased, prices of non-tradables and wages follow suit. The extent of passthrough to domestic prices determines the ultimate inflationary effect of a devaluation. The problem with such passthrough is that it makes it more difficult for the government to neutralize the recessionary effect of fiscal and monetary contraction by an appropriate real exchange rate change.

The notion of passthrough is an important one, so let us spend a moment on it. The extent of passthrough determines both the effectiveness of a nominal devaluation and the ultimate inflationary consequences. Suppose that the domestic CPI attaches a weight of θ on non-tradables and $(1-\theta)$ on

6. The heterodox view therefore shares many of the same ideas with the earlier "structuralist" school on inflation. The structuralists believed that inflation is the by-product of structural rigidities in the economy: the limited ability of the economy to earn foreign currency; the periodic shortage of food; and the distributive struggles over income.

tradables, so that the inflation rate (π) is given by:

(6) $\pi = \theta\hat{P}_n + (1-\theta)\hat{e}$,

where a "hat" denotes percentage changes and inflation in the world prices of tradables is assumed zero. Suppose further that the passthrough coefficient is λ: for every one percent increase in the exchange rate, P_n increases by λ percent:

(7) $\hat{P}_n = \lambda\hat{e}$.

We would like to know the effect on inflation of a certain desired increase in the real exchange rate. Let the target increase in the real exchange rate (in percent terms) be denoted r. This yields the requisite nominal devaluation:

(8) $r = \hat{e} - \hat{P}_n = (1-\lambda)\hat{e} \Rightarrow \hat{e} = r(1-\lambda)^{-1}$.

Putting (6), (7), and (8) together, we arrive at an expression for π:

(9) $\pi = r(1-\lambda)^{-1}[\lambda\theta + (1-\theta)]$,

which expresses the inflation effect of any desired improvement in the real exchange rate. Supposing $\theta = 0.3$ and $\lambda = 0.5$, a 20 percent real depreciation will yield an inflation rate of 34 percent! (If we already have some inflation, this number will correspond to the absolute increase in the inflation rate.)

In economies with high inflation and ready passthrough, therefore, exchange rate policy cannot be freely used as an instrument of expenditure-switching. The implication for inflation control is that stability in the

nominal exchange rate can be desirable. This creates a conflict in exchange-rate management between the external (BOP) target and the internal (inflation) target.

Expectational factors. A third complication has to do with credibility of government policy. Frequently, the government's announcement of a stabilization problem will lack credibility, given the likely history of failed stabilization attempts. Entrepreneurs and unions will then safely set their prices in the expectation that monetary contraction will be short-lived. Such expectations of policy reversal can in turn prove self-fulfilling. Given that wages and prices are set too high, the government may then prefer to "validate" these price increases by following an expansionary policy, because doing otherwise would have recessionary implications.

Coordination problems within the private sector. The tendency for inflation to remain high can also be viewed as a "coordination failure" between key price-setters in the economy: unions, businessmen, public enterprises, etc. Each of these actors sets its prices taking into account the likely actions by the others. Each of them would like the others to set low prices, and itself to set a high price. In the absence of coordination, a "prisoners' dilemma" with high prices all-around can emerge.

As a simple example, let us think about the interaction between a trade union and a producer. Each has to decide whether to set its price "high" or "low". The pay-off matrix can be represented as follows:

		producer: low p	hi p
union:	low w	1, 1	-1, 2
	hi w	2, -1	0, 0

The dominant strategy for the union is to set a high wage, and likewise the dominant strategy for the producer is to set a high price. We end up at the high-inflation equilibrium, even though both actors would have been better off in the low-inflation equilibrium (top left corner).

How does the Heterodox View of Inflation Fit in the Australian Model? Very uncomfortably. The Australian model relied on the orthodox view identifying inflationary pressure with excess demand. With the heterodox approach, that won't do. We can now have any rate of inflation irrespective of the state of demand, at least in the short- to medium-term. Therefore, we need to modify our framework. Fortunately, a simple re-interpretation is all that is necessary. We now identify the IB schedule exclusively with the state of employment: to the left of IB we have unemployment, and to the right what is sometimes called "overfull employment". Since inflation is independent of the state of aggregate demand in the economy, our inflation rate is independent of which quadrant we are in. This allows us to take into account the anomaly that when inflation has a large inertial component, inflation and unemployment can coexist.

With this modification, it is straightforward to see how the orthodox

remedy is now powerless. Start from a point on the IB schedule, where we have reasonably full employment but (let us assume) a high rate of (inertial) inflation. Suppose we now cut back on domestic absorption (through fiscal cutbacks and accompanying monetary contraction). This will put us in a region of unemployment, with no immediate effect on the overall rate of inflation. The orthodox prescription generates unemployment with little immediate effect on inflation.

Inertial theories fail to explain how inflation gets started in the first place. For that, we have to look to our old culprit: excessively large budget deficits. Therefore, the best heterodox treatments try to do two things: (i) make some credible effort to bring the budget under control, by raising taxes, reducing current expenditures, and shrinking the payroll of public enterprises; and (ii) establish a wage-price-exchange-rate freeze, in the hope that this will realign people's expectations about the future, break inertia and provide a focus to price-setters for coordination around a low-inflation equilibrium. It is the second element which differs from the orthodox approach.

Significantly, those programs which have relied mostly on the freeze have ultimately failed (Argentina's Austral Plan, and Brazil's Cruzado Plan). One notable instance in which inflation stabilization was successful (Israel) employed both elements. One may add, cynically, that large amounts of financial assistance from the U.S. also helped in the latter case. The Bolivian hyperinflation, in turn, was stopped by simply stabilizing the exchange rate (which in turn required some good old orthodox medicine, i.e. a drastic budgetary squeeze), without fixing any prices; the trick there was to

realize, as Jeff Sachs did, that domestic prices were no longer set in pesos but in dollars.

Appendix: The Algebra of the Real Public Sector Deficit

Earlier we saw how monetary accounts could be used to perform policy analysis, and how the IMF's financial programming relied on key monetary identities. The public-sector budget identity, when appropriately manipulated, can also be used for a similar purpose. The purpose of this appendix is to lay the groundwork for this. In the process, we will learn some important economic principles. In particular, we will learn how to correct the budget for inflation and for capital losses on external debt.

We start with the identity expressed above in equation (2):

$$(A1) \quad D = \Delta B + e\Delta B^* + \Delta MB,$$

Note that I have now ignored ΔNFA. That is simply to save on notation; to make the identity hold we will now have to think of ΔB^* as the increase in the net foreign liabilities of the aggregated public sector (including the Central Bank). Next, we distinguish between three items that make up the deficit: (i) the "primary deficit" (PD); (ii) interest payments on domestic debt (iB); and (iii) interest payments on foreign debt (i^*eB^*). Hence, the primary deficit of the public sector is the deficit excluding all interest payments. We then write (A1) as:

$$(A2) \quad PD + iB + i^*eB^* = \Delta B + e\Delta B^* + \Delta MB.$$

The left-hand side of this expression is the deficit as normally stated in government accounts.

This definition of the nominal deficit has two shortcomings. First, it is not inflation-corrected. That is, to the extent that domestic interest

payments compensate for expected inflation, some of the nominal interest payments on domestic debt are more properly considered amortization of principal rather than a current expenditure. In other words, the inflation component of iB belongs on the right-hand side rather than the left-hand side. Secondly, we have to take into account the capital loss suffered by the government on its stock of foreign debt when the domestic currency depreciates. Since this loss has to be financed somehow, it is appropriate to consider it a part of government's current expenditures, and therefore to include it on the left-hand side. In what follows, we will make these two adjustments to the budget identity.

Correcting for Inflation. We subtract πB and πeB^* from each side of the equality, since these are the part of debt eroded by inflation:

(A3) $PD + (i - \pi)B + (i^* - \pi)eB^* = (\Delta B - \pi B) + e(\Delta B^* - \pi B^*) + \Delta MB.$

Note that $(i - \pi) = r$, the domestic real interest rate. With regard to domestic debt, then, this leaves only the real-interest payments on the left-hand side. But on the foreign debt side we now have the funny term $(i^* - \pi)$, which is not meaningful as i^* is the dollar interest rate while π is the peso inflation rate. So we need:

Correcting for Exchange Rate Changes. We now add $\hat{e}(eB^*)$ to each side, where $\hat{e}$ denotes the percentage change in the exchange rate:

(A4) $PD + (i-\pi)B + (i^* + \hat{e} - \pi)eB^* = (\Delta B - \pi B) + e(\Delta B^* - \pi B^* + \hat{e}B^*) + \Delta MB.$

Note that by doing so we are adding capital losses on the external debt to the deficit. Now $(i^* + \dot{e} - \pi) = [(i^* - \pi^*) + (\dot{e} + \pi^* - \pi)]$, where π^* stands for the foreign (dollar) inflation rate. In turn, $(i^* - \pi^*) = r^*$, the foreign real interest rate, and $(\dot{e} + \pi^* - \pi) = \dot{s}$, the percentage change in the real exchange rate.[7] Therefore we are left with:

$$(A5) \quad PD + rB + (r^* + \dot{s})eB^* = (\Delta B - \pi B) + e(\Delta B^* - \pi B^* + \dot{e}B^*) + \Delta MB.$$

Now the left-hand side looks OK, but we have a mess on the right-hand side. It turns out that we can simplify quite a bit by restating our debt stocks in terms of debt-GNP ratios. Now define:

$\delta = PD/GNP$ $\quad b = B/GNP$ $\quad b^* = eB^*/GNP$ $\quad n =$ growth of real GNP.

Then, dividing through by GNP, and stating the right-hand side in terms of debt ratios (i.e., subtracting nB and enB^* from each side), we have our final equation:

$$(A6) \quad \delta + (r - n)b + (r^* + \dot{s} - n)b^* = \Delta b + \Delta b^* + m\hat{H}.$$

where $\hat{H}$ is as before the rate of increase of base money. To arrive at (A6) we have made the following substitutions:

$$\Delta b = [\Delta B - \pi B - nB]/GNP \quad \Delta b^* = [\Delta B^* + \dot{e}B^* - \pi B^* - nB^*]/GNP.$$

Equation (A6) is useful in that it links the evolution of domestic and foreign debt ratios and monetization, on the one hand, to the state of the primary deficit and the relation between real interest rates and domestic

7. This is somewhat different from the concept of the real exchange rate we have used so far. Rather than comparing the prices of tradables to non-tradables, this compares foreign to domestic prices.

growth rates, on the other. It provides a framework which can be used to answer a number of questions: (i) given targets for monetization and debt-output ratios, what is the permissible primary deficit? (ii) What would be the implications for monetization (and ultimately inflation) of a desired reduction in the foreign debt ratio in the absence of a reduction in the primary deficit? (iii) When will it be sufficient to balance the primary budget to stabilize the domestic and foreign debt ratios? When will we need a primary <u>surplus</u> instead? (iv) What would be the implications for the soundness of the budget of changes in the economy's rate of growth?

The Indonesian Oil Crisis, 1986[1]

In January 1986 President Suharto released the Indonesian budget for the 1986-87 fiscal year. For the first time since Suharto came to power in 1966 the budget called for a spending reduction: a 7 percent drop in nominal terms compared with the previous year's estimated spending (see Exhibit 1).

The cause of the budget cut was an anticipated 14 percent decline in revenues from oil and natural gas because of falling world prices. Oil and gas tax revenues provided over half of central government income in 1985-86. Additional steps to meet the anticipated revenue decline included reforms in the land and building tax and in the stamp duty, and a call for greater remittances (through increased efficiency) from state-owned enterprises. In spite of the unprecedented budget cut and the increased non-energy revenue projections, the current account deficit was projected to rise 5.2% in 1986-87, to Rps. 2,214 billion compared with Rps. 2,104 million estimated for 1985-86. However, Suharto pledged in his parliamentary budget announcement not to devalue the rupiah.

Like any country facing such an economic squeeze, Indonesia had three basic tools at its disposal: government spending cuts and taxation; internal and external borrowing; and trade policy, including primarily the exchange rate but also including tariffs, quotas, and other trade restrictions. The specific history and politics of Indonesia determined the appeal and feasibility of government actions in these three areas.

Since coming to power in 1966, President Suharto has faced few serious challenges to his rule. The government party dominates the parliament; opposition parties are weak, and the army supports the President. Nevertheless, political considerations cannot be entirely ignored in choosing economic policies. Competing interests include proponents of agricultural versus industrial development; rural versus urban residents; government officials; army officers and private businessmen implementing government-funded investment projects; the beneficiaries and victims of trade protection; economic planners; and external forces such as private and governmental creditors, the World Bank and the International Monetary Fund.

The Indonesian economy is characterized by a strong government role and heavy dependence on the extractive industries: agriculture and mining, including oil and gas production. Government economic control includes not only macroeconomic policy instruments but also sole rights over many natural resources, public enterprises in many sectors, and numerous bureaucratic controls.

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[1]This case was written by Naomi Goldstein under the supervision of Professor Shantayanan Devarajan. It relies heavily on "Indonesian Economic Policies and Their Relation to External Debt Management," by Wing Thye Woo and Anwar Nasution, unpublished, October 1987.

The industrial origin of 1985 Gross Domestic Product (GDP) is shown in Exhibit 2. Agriculture made the largest contribution, at one quarter of GDP, while mining, including energy production, contributed 16 percent. Together these sectors contributed 40 percent of GDP. They also account for virtually all of Indonesia's exports: oil and gas alone were 68.4 percent of export value in 1985. Imports are primarily intermediate products, rather than consumer goods, including machinery, petroleum products, chemicals, minerals, and metals. Indonesia's largest export customers are Japan and the U.S. These countries are also Indonesia's largest suppliers of imports.

Indonesia is the fifth most populous country in the world, with a 1985 estimated population of 163 milllion. The country is comprised of 13,000 islands scattered over an area of some 5 million square kilometers between Australia and Southeast Asia. Indonesia's population is heavily concentrated in a few islands: Java, Madura, and Bali contain almost 65 percent of the population, though only 7 percent of the land. The population is not highly urbanized, however. In 1980 only 22 percent lived in urban areas.

Suharto comes from a peasant background and has consistently emphasized the importance of improving the rural standard of living. Two historical factors may contribute to this commitment. First, the Communist Party of Indonesia (PKI) sponsored a coup attempt in 1965. The defeat of this attempt resulted in deaths estimated between 500,000 and one million, and led to Suharto's accession to the presidency. The PKI was a peasant-based movement which claimed over 20 million followers in 1965. Improvements in the rural standard of living may reduce opportunities for the PKI to organize opposition to Suharto's regime.

Second, the diversity of ethnic groups populating Indonesia's 13,000 islands has led to numerous secessionist movements. The potential for such movements increases the importance of economic policies favoring the rural Outer Islands.

Pro-rural policies include not only spending on rural development projects, but also trade policies favorable to agricultural producers. Currency devaluations tend to favor the agricultural export sector over the typically urban manufacturers of import substitutes, since quantitative import restrictions make these goods practically non-tradeables. Since imports of restricted goods cannot increase regardless of the price difference between imports and import substitutes, the prices of import substitutes are determined by domestic conditions rather than by world prices.

While rural development is one important national goal, industrial development also has a claim on government resources, based on popular and intellectual support and on the influence of special interests. The economic policies of the Dutch colonists were seen as designed to limit Indonesia to the production of raw materials for Dutch manufacturing. Consequently industrialization is an important symbol of independence and is considered essential to economic growth. The result is not only government investment in industrialization, but also high levels of protection for the manufacturing sector, primarily

through quotas and monopoly licenses, many of which are held by relatives and friends of government officials.

The longstanding involvement of army officers in business ventures means there is a powerful constituency favoring trade protection for industry. During the war for independence in the 1940's the army was self-supporting by necessity. Under Suharto's predecessor Sukarno, army generals were expected to raise revenue to supplement their budgets; under Suharto senior army officers have continued to be heavily involved in business. This involvement is consistent with the doctrine of "dwifungsi," which means "dual function" and refers to the army's dual role in defense and in development.

These ambidextrous army officers are important members of one of the two major camps competing to influence economic policy in Indonesia. These groups are known as the "technician-engineers" and the "technocrat-economists." The engineers include officials in the Ministries of Trade, Industry, Communications, and Manpower, and structuralist economists, as well as army officers. Many come from non-academic backgrounds. They favor large government investments in capital-intensive projects as well as trade protection. Their business interests and institutional affiliations lead them to favor import-substitution industrialization as the means to economic growth.

The economists include officials in the Ministry of Finance and the National Planning Body. Many are U.S.-educated neoclassical economists and the group is sometimes known as the "Berkeley Mafia." This group opposes trade protection and has advocated austerity measures in response to falling oil revenue in the 1980's. In these positions they are allied with outside advisors like the World Bank. Their institutional affiliations give them control over macroeconomic policies, but not over tariffs, which are controlled by the Ministry of Trade. Consequently they tend to focus on exchange rate management as the means to growth through increased exports.

The 1960's: Austerity and Stabilization.

When Suharto came to power in 1966 after the bloody suppression of a communist rebellion he inherited an economy in chaos. An overvalued exchange rate over a prolonged period had damaged the export industries. Import-competing industries, protected by high tariffs, were notoriously inefficient. The complex tax system featured high marginal rates and serious corruption. The government had fueled inflation by monetizing large deficits and by extending central bank credit to state enterprises and private sector favorites. Central government spending was 103 percent larger than revenue in 1963, 140 percent in 1964 and 163 percent in 1965. The inflation rate had grown from 127 percent in 1963 to 152 percent in 1964, and reached 662 percent in 1965. 1966 external debt payment obligations were $530 million: 70 percent of GDP and 132 percent of exports.

Several months after assuming power, Suharto's government announced a new economic program of which the central plank was a commitment to balanced budgets. This meant no internal borrowing to finance government deficits, so that government expenditure would be limited to the sum of domestic revenue and external loans. At the time

this constraint was quite stringent, since foreign loans were not forthcoming. In addition, central bank credit was significantly reduced for both state and private enterprises. Inflation fell to 100 percent in 1967 and 18 percent in 1969. By 1971 inflation was only 4 percent.

In addition to these expenditure reduction measures, the government devalued the rupiah from 10 per dollar to 100 per dollar,[2] and allowed moderate devaluations at frequent intervals over the next several years whenever balance-of-payments problems emerged. The government also removed price controls from many commodities to encourage exports. Real non-oil exports (primarily agricultural commodities) rose 12 percent between 1965 and 1968, and real GDP increased at an 8 percent annual rate from 1968 to 1973. Indonesia also secured a reorganization of its external debts: its creditors agreed to a long-term rescheduling of existing debts and a plan of further loans on generous concessionary terms.

The 1970's: Energy Revenues Support Rapid Growth

The 1970's were characterized by high growth in GDP and government spending, financed by growing energy revenues and foreign borrowing. The government continued to adhere to the rule of no internal borrowing, but this constraint no longer limited government spending. The growth of oil and gas export volume, combined with the price increases of OPEC I (1973) and II (1979) are the most striking trend of this period. Oil and gas tax revenues grew almost twelvefold in real terms between 1969-70 and 1979-80.

One of the critical events of this period was the Pertamina crisis of 1975, when the state oil company over-extended itself in the foreign credit market. This crisis strengthened the role of the technocrat-economists vis-a-vis the technician-engineers.

Trade Policy. The rupiah remained stable at Rps. 415 per dollar for seven years, from August 1971 to October 1978. This stability was possible because there was a strong balance of payments position throughout this period. The current account deficit was never greater than 4 percent of GDP, and in some years there was a current account surplus (see Exhibit 3). Growth averaged 7.9 percent annually during this period, and inflation 22 percent.

The government reduced a number of duties on tradeable goods in 1976. However, they were often replaced by quotas or monopoly import licenses. Consequently government revenues were transformed into rents for private enterprises. with little resulting stimulus to the non-energy tradeables sector.

While energy exports were rising both in volume and revenue, non-energy exports were also rising in volume; in dollars; and in the volume of imports for which they could be exchanged. However, the inflation driven by the growth of the energy sector was lowering the

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[2]These figures are not precise because there were different official exchange rates for different types of transactions until 1970.

price ratio of tradeables to non-tradeables (the real exchange rate). Producers of tradeable goods were selling at prices determined by the world market, while inflation was steadily reducing the domestic purchasing power of their revenue, and raising the prices of their domestic inputs. One indicator that the Indonesian non-energy tradeables sector was being hurt, even though it was growing by some measures, is that it grew much more slowly than Malaysia's and Thailand's exports of similar products (see Exhibits 4 and 5).

Perhaps in response to the deteriorating real exchange rate, the government devalued the rupiah by 50 percent in November 1978 even though there was no deterioration in the current account balance. In response, non-energy exports increased in one year by 36 percent in volume, by 52 percent in dollars, and by 78 percent in domestic purchasing power. The devaluation was also followed by a sharp increase in inflation, in spite of tight credit and government efforts to control the prices of staples. In the year ending September 1979 consumer-price inflation was 30 percent, compared with 10 percent in the first 10 months of 1978. This inflation eroded the effect of the devaluation. The Morgan Guaranty competitiveness measure rose from 79.6 before the devaluation to 111.3 in 1979, but fell to 101.1 by 1980.

Following the devaluation, the government announced a policy of "managed float," under which the rupiah would be linked to a basket of the currencies of its main trading partners, rather than to the dollar exclusively. In practice, however, the link with the dollar continued to predominate.

Taxation and Expenditure. Real total government revenue increased almost five-fold during the 1970's. Since energy revenues grew almost twelve-fold during the decade, they accounted for an increasing proportion of total revenue, rising from 26.2 percent in 1969-70 to 63.6 percent in 1979-80. During the same period total revenue grew from 9.3 to 19.5 percent of GDP (see Exhibit 6).

Spending was characterized by an increasing emphasis on development. The official development category grew from 36.8 percent of total government spending in 1969-70 to 49.7 percent in 1979-80. These figures must be interpreted with some caution, since the government includes in development some items not ordinarily categorized as such, notably military spending.

Foreign Debt. During the 1970's public external debt rose substantially. Indonesia's growing energy sector made foreign loans increasingly available. While debt was rising, exports and GNP were rising even faster, so that both the debt-to-export and debt-to-GNP ratios fell during the decade. However, as an increasing proportion of Indonesia's debt became private rather than official, higher repayment rates meant that annual debt service grew faster than exports or GNP. Annual foreign borrowing fell over the decade as a proportion of government spending, from 26.6 percent in 1969-70 to 17.1 percent in 1979-80. At the same time, since government spending was rising as a proportion of GDP, annual foreign borrowing rose as a proportion of GDP, from 3.4 percent in 1969-70 to 4.0 percent in 1979-80 (see Exhibits 7 and 8).

The Pertamina Crisis. Pertamina, the state oil company, grew rapidly from the beginning of the Suharto administration. Pertamina exemplified the power of the technician-engineers, who were playing an increasingly large and independent role in development. An army officer, General Ibnu Suktowo, became chairman of the National Oil Committee in 1966 and president-director of Pertamina in 1968. In these jobs he developed a reputation for effectiveness that led to his taking over lagging development projects of diverse kinds. In addition to increasing oil production from less than half a million barrels per day in 1966 to one and a half million barrels per day in 1973, Pertamina "improved harbours, developed residential and commercial estates, and built roads and hospitals."[3] Pertamina borrowed heavily in the international credit market to finance its diverse activities.

The sequence of events culminating in Pertamina's 1975 default began with a direct conflict between the company and the technocrat-economists at the Ministry of Finance. In 1972 it came to light that Pertamina had borrowed $350 million in short- and medium-term loans without informing the Ministry of Finance, as it was required to do under a recent regulation. When the United States discovered this it suspended economic aid. After U.S. aid resumed, Pertamina started borrowing only short-term loans, which did not require approval by the Ministry of Finance. Unfortunately, short-term rates rose following the OPEC I price increase as the industrialized countries tried to forestall inflation through tight money. In addition, a couple of bank failures from international speculation made the international banking community nervous. Pertamina's creditors took a close look at Pertamina's debts. They discovered that they had extended $10.5 billion in credit without ever having seen a full statement of Pertamina's finances, and that Pertamina's debt was not guaranteed by the Indonesian government. The banks refused to roll over existing debts automatically without additional information about Pertamina's finances. Pertamina defaulted in February 1975, when it was unable to meet a payment to the Republic National Bank of Dallas.

The Indonesian government assumed responsibility for Pertamina's debt, undertaking a combination of repayment, rescheduling short-term debts as longer-term debts, and cancelling contracts. Even with access to international credit, the rescue operation put a strain on the country's finances: the foreign reserve position of Bank Indonesia fell from $1.5 billion at the end of 1974 to a deficit of $0.7 billion at the end of 1975.

The technocrat-economists were given responsibility for reorganizing Pertamina following its 1975 default, and were also given increased control over external borrowing by all state enterprises. They used this control to reduce the long-term publicly guaranteed external debt of state enterprises from $2.2 billion, or 33 percent of total public debt at the time of the crisis, to $1.7 billion in early 1979, which was only 13 percent of total public debt.

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[3]Woo and Nasution, Chapter 7 p. 9

The 1980's: Falling Oil Revenues and Retrenchment.

In 1982 a global recession was followed by the collapse of world oil prices (see Exhibit 12). Indonesia's oil revenue declined (in 1980 dollars) from $7.8 billion in 1981-82 to $6.9 billion in 1982-83. The government responded by devaluing the rupiah in 1983; by increasing taxes in 1984, 1985, and 1986; and by increased borrowing. The 1980's also saw increased use of quantitative restrictions on imports.

Trade Policy. Following the 50 percent devaluation of 1978, the government allowed the rupiah to decline gradually to compensate for domestic inflation, which was accelerated by the November 1979 OPEC II oil price increase. However, low worldwide growth reduced demand for Indonesia's exports, leading to a deterioration in the balance of payments. Both the volume and the real domestic value of non-energy exports fell by half between 1979 and 1982 (see Exhibit 9). By 1982 the current account deficit was a record 6 percent of GDP, and foreign currency reserves were worth only 10 weeks of imports. Capital flight was accelerating. The "errors and omissions" category of accounts, which includes private capital transactions, grew from $0.6 billion outflow in 1979 to over $2 billion outflow annually during 1980-82. Low real growth in 1982 (GDP actually decreased 0.3 percent) added to the appeal of a devaluation. In March 1983 the government devalued the rupiah by 28 percent. In response, non-energy exports increased by 25.7 percent in volume, and by 58.4 percent in domestic purchasing power between 1982 and 1983. The current account deficit fell to 2.5 percent of GDP in 1984. Through tight monetary and fiscal policies the government was able to keep inflation to roughly 10 percent in 1983 and 1984.

In late 1982 the government also increased the number of import quotas and monopoly licenses, limiting imports but also weakening the tradeables sector by allowing monopoly license-holders to raise the price of imported inputs. By 1985 1,780 out of 5,229 imported items were subject to licensing or quotas. License restrictions covered 30 percent of total import value.

Taxation and Expenditure. The government accompanied the 1983 devaluation by increased taxes and reduced spending. Some 47 capital-intensive projects were postponed indefinitely at the time of the devaluation. In December 1983 the government announced a revision of the corporate and personal income taxes, and a tax amnesty program to encourage future compliance by past scofflaws. These measures led to an increase in registered income taxpayers from 550,000 in March 1984 to 995,000 at the end of 1985. Real non-energy income taxes rose from Rps. 1 trillion in fiscal 1983 to Rps. 1.7 trillion by fiscal 1986.

In April 1985 the government replaced a complex sales tax with a value added tax of 10 percent. Like the income tax reform, this measure also led to a dramatic increase in the number of registered taxpayers, from 25,000 in March 1985 to 60,000 in December 1985. Revenue from domestic consumption taxes increased 94 percent in the first year after this reform. Finally, in January 1986 the government consolidated seven property taxes into one and revised the stamp duties.

External Debt. Both debt and debt service have risen in the 1980's, whether measured in real terms, or relative to exports or GNP (see Exhibits 10 and 11). The debt-to-export ratio grew from 63.7 percent in 1981 to 103.8 percent in 1983 and 212.2 percent in 1986. The debt-to-GNP ratio grew from 19.2 percent to 48.2 percent over the same period. As the proportion of debt which had been granted on concessionary terms continued to fall during these years, higher interest payments meant that debt service rose even more sharply. The depreciation of the rupiah also raised the domestic cost of debt service. The debt service-to-export ratio grew from 8.2 percent in 1980 to 29.3 percent in 1986, and the debt service-to-GNP ratio grew from 2.5 percent to 6.6 percent over the same period.

1986: Pressures Build.

During the first quarter of 1986, after Suharto announced the austerity budget, oil prices fell even more sharply than anticipated. While the budget was based on an average price of $25 per barrel, the actual price fell 50 percent in the first quarter, to less than $13 per barrel (see Exhibit 12). Each one-dollar drop in the price of oil was estimated to mean a $300 million drop in government revenues. Nevertheless the House of Representatives passed the budget without revision in late February. This appeared to be primarily a political move designed to maintain public confidence. By March, analysts projected a budget shortfall of Rps. 3 trillion, or 14 percent of the budget. However, President Suharto declared on March 10 that the government's development strategy had not been abandoned on account of the unfavorable export situation.

In spite of the worsening oil market foreign banks showed no reluctance to lend, and in the first quarter of 1986 Indonesia was able to undertake two major international borrowings which had been under discussion since early December. Indonesia also had available more than $2 billion in standby loans arranged during the past few years. The Economist attributed the continued availability of loans to the austere budget, which they said had "stunned the international banking community into another bout of admiration for the Indonesian government's disciplined approach to financial housekeeping."[4]

The government demonstrated a determination to maintain order and suppress possible tensions in anticipation of the upcoming April 1987 legislative elections. The press received clear warnings to adhere to official ideology and the ongoing trials of several prominent dissidents provided a warning to any potential opposition.

Analysts expected the budget to be implemented with flexibility. An example of such flexibility was an April 3 reduction in the fertilizer subsidy, one of very few budget items which had been scheduled for increased spending. Nevertheless debate focussed on ways to raise government revenues, including even the possibility of relaxing the balanced budget restriction to permit internal borrowing. Several economists recommended a countercyclical budget deficit,

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[4] "Economist Intelligence Unit Quarterly Economic Review of Indonesia," London, 1986-1, p.32

accompanied by anti-inflationary measures. Another policy, which could accomplish the same effect without violating the letter of the balanced budget constraint, would be increased Central Bank credit creation. Others suggested expanded external borrowing, or a devaluation of the rupiah to increase dollar-denominated oil revenues.

Government foreign exchange reserves remained high: in March they were $10.7 billion, equivalent to 11 months of imports. However, concern about a possible devaluation of the rupiah was causing massive outflow of capital as speculators hurried to buy dollars. Indonesians bought more than $800 million in the first two weeks of March; turnover on March 14 alone was a record $120 million. This speculation was slowed but not stopped when the government revalued the rupiah slightly in mid-March (from 1,130 to 1,126 per dollar).

Some analysts argued for postponing or altogether avoiding a devaluation. They argued that, in contrast with 1983, foreign exchange reserves and available foreign credit were high. These analysts pointed out that a devaluation would increase the rupiah value of Indonesia's debt service obligations, denominated primarily in yen and dollars. Most importantly, they argued that the rupiah was not overvalued for three reasons: domestic inflation had been low - less than 0.4 percent in the second half of 1985; the rupiah had been allowed to adjust gradually downward against the dollar since 1983, falling from 970 Rps. per dollar at the beginning of 1983 to 1131 Rps. per dollar in the second quarter of 1986; and the dollar itself had been in decline relative to the yen and European currencies since 1984 (see Exhibit 13). In the year ending July 1986 the rupiah fell by almost 55 percent against the yen, by 27 percent against the Deutschemark, by 23 percent against the French franc, and by 7 percent against the British pound. Non-dollar currencies accounted for some 55 percent of import costs and 60 percent of debt service in 1986. The IMF estimated that in the year ending March 1986 the real effective exchange rate of the rupiah fell by 17 percent against a basket of currencies, to a level 10 percent below that immediately following the 1983 devaluation. The Morgan Guaranty Competitiveness Index was at 110 in 1986, almost identical to its level in 1979 following the devaluation of 1978, and well above its level of 98.4 following the 1983 devaluation (see Exhibit 9).

The Finance Minister, Ali Wardhana, argued that budget cuts were the only adequate response to the oil revenue crisis. Anwar Nasution, a University of Indonesia economist, argued that devaluation without structural reforms - such as removing quantitative restrictions on imports - would only fuel inflation and depress demand, providing a quick fix but no lasting benefit. In May the government introduced a package of reforms which liberalized trade restrictions slightly. In the same month the World Bank released a report emphasizing the importance of lifting trade restrictions and increasing non-oil exports. This advice, however, was easier to give than to follow, since many of the trade restrictions took the form of import licenses providing monopoly rents to relatives and friends of government officials.

On the other hand, some economists argued that a devaluation was necessary precisely in order to offset the effects of the increase in

quantitative restrictions on imports since 1983. For a given real exchange rate, restrictions on imported inputs to tradeables would allow monopoly license-holders to raise prices, reducing the profitability of the tradeables sector without affecting the real exchange rate (typically measured using world prices for traded goods). Thus, the prevalence of quantitative restrictions made the real exchange rate an inaccurate measure of the relative attractiveness of tradeables and non-tradeables.

By September, the World Bank was projecting a $5 billion shortfall in oil revenues, about one quarter of the budget. Low world prices for Indonesia's other exports diminished the benefits of increased non-oil export volume (see Exhibit 9). The current account deficit for 1986-87 was expected to approach $4 billion, almost double the previous year's deficit, and almost double the amount projected in the January budget proposal.

Whether or not nonoil tradeables prices were undervalued, the radical decline in oil prices was creating a current account deficit that would require either significant capital inflows in the form of international borrowing; internal borrowing; or an inevitable devaluation as foreign exchange reserves ran out.

Exhibit 1

Breakdown of Government Revenue and Expenditure
(Rp bn; years ending Mar 31)

	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87a
Revenue						
Domestic revenue	12,213	12,418	14,433	15,905	19,253	17,833
Direct taxes[b]	10,089	9,982	11,584	12,708	13,625	12,903
of which:						
oil/gas company tax	8,628	8,170	9,520	10,430	11,145	9,738
personal income tax	207	289	399			
non-oil/gas corporation tax	559	675	757	2,121[c]	2,313[c]	2,881
withholding tax	513	642	628			
tax on interest, dividends & royalties	88	101	148			
land tax	94	105	132	157	167	284
Indirect taxes[b]	1,743	1,932	2,265	2,372	3,928	3,857
of which:						
sales taxes & VAT	534	708	831	878	2,327	2,143
excise tax	438	544	620	773	944	1,055
import duties	536	522	557	530	607	580
export tax	129	82	104	91	50	79
Other taxes[d]	44	69	65	138	208	119
Non-tax receipts	337	435	519	687	1,492	954
Foreign aid receipts	1,709	1,940	3,882	3,478	3,573	3,589
Total[f]	13,922	14,358	18,315	19,383	22,826	21,422
Expenditure						
Routine expenditure	6,978	6,996	8,412	9,429	11,952	13,126
of which:						
personnel	2,277	2,418	2,757	3,047	4,018	4,213
materials	923	1,041	1,057	1,183	1,367	1,367
regional subsidies	1,209	1,315	1,547	1,883	2,489	2,640
debt service[e]	931	1,225	2,103	2,776	3,323	4,223
other	1,638	997	948	540	754	684
Development expenditure	6,940	7,360	9,899	9,952	10,873	8,296
Total[f]	13,918	14,356	18,311	19,381	22,825	21,422

a Budget. b Excludes unspecified "other" taxes. c After the tax reform of January 1, 1984, a single income tax replaced these separate taxes. d Direct and indirect. e Internal and external. f Totals may not add due to rounding.

Source: Ministry of Finance.

Source: Country Profile: Indonesia, 1986-87, Economist Intelligence Unit, London

Exhibit 2

Origins of GDP 1985c

	% of total
Agriculture	23.6
Mining & quarrying	16.2
Manufacturing	13.5
Construction	5.3
Wholesale & retail trade	15.4
Transport & communications	6.5
GDP at factor cost incl others	100.0

Components of GDP 1985c

	% of total
Personal consumption	59.2
Government consumption	11.9
Gross domestic capital formation	27.3
Exports	22.7
Imports	-21.1
GDP at market prices	100.0

Principal Exports 1985c

	$ mn
Crude oil & products	9,083
Natural gas	3,635
Wood & products	1,194
Rubber & products	718
Textiles & garments	559
Coffee	556
Tin & products	247
Total incl others	18,587

Principal Imports 1985c

	$ mn
Machinery & equipment	2,699
Chemicals	1,514
Mineral products	1,451
Base metals	1,331
Transport equipment	889
Resins & plastics	489
Prepared foods	407
Total incl others	10,262

Main Destinations of Exports 1986c

	% of total
Japan	44.9
USA	19.6
Singapore	8.4
Netherlands	3.1
South Korea	2.4
Hong Kong	2.3
West Germany	2.3

Main Origins of Imports 1986c

	% of total
Japan	29.2
USA	13.8
Singapore	9.1
West Germany	6.7
Saudi Arabia	6.0
Australia	3.9
UK	3.8

a Official estimate. b EIU estimate. c Provisional.

Source: "Country Report: Indonesia," Economist Intelligence Unit, London: 1987-3, p.2

Exhibit 3

ECONOMIC CONDITIONS DURING PERIOD OF FIXED EXCHANGE RATE, AUG'71 TO NOV'78

	1970	1971	1972	1973	1974	1975	1976	1977	1978
current balance as % of gdp	-3.4	-4.0	-3.0	-2.9	2.3	-3.6	-2.4	-0.1	2.7
current account receipts as % of gdp	13.6	14.8	17.2	20.7	29.1	23.1	23.6	23.9	22.0
nongold reserves/ imports (in weeks)	8.1	8.7	19.1	15.3	20.2	6.4	13.7	20.9	20.4
gdp growth rate %	6.5	7.0	9.4	11.3	7.6	5.0	6.9	8.9	7.7
inflation rate %	12.3	4.4	6.4	31.0	40.6	19.1	19.8	11.0	8.1

Source: Woo and Nasution

Exhibit 4

PERFORMANCE OF NONOIL MANUFACTURING EXPORTS (1974 = 100)

In terms of:

	physical volume	US$	foreign purchasing power	domestic purchasing power
1969	NA	28.6	52.2	51.6
1970	NA	33.6	58.5	60.1
1971	73.9	36.0	59.4	66.9
1972	83.4	40.0	60.2	73.7
1973	96.3	73.2	91.1	103.2
1974	100.0	100.0	100.0	100.0
1975	99.6	82.6	74.2	69.5
1976	111.9	115.2	103.8	80.8
1977	121.0	159.7	133.0	100.9
1978	118.0	166.4	123.0	103.6
1979	160.0	253.7	162.4	184.6
1980	144.5	276.4	155.9	170.8

Memo item: Average annual growth rate of nonoil exports in 1973-78 period. Exports in US$.

	Indonesia	Malaysia	Thailand	S. Korea	Hong Kong	Singapore
Growth rate %	15.5	32.3	19.9	30.6	19	20

Physical volume from deflating rupiah value series by nonoil export price index
Foreign purchasing power from deflating US$ value series by export unit value of industrial countries.
Local purchasing power from deflating rupiah value series by Indonesian CPI.

Source: Woo and Nasution

Exhibit 5

INDICATORS OF TRADEABLE-NONTRADEABLE PRICE RATIO, PT/PN

	1971	1972	1973	1974	1975	1976	1977	jan-oct 1978	1979	1980
a) RELATIVE TO JAKARTA CPI										
Imports-wholesale prices	105.9	111.1	107.9	100.0	91.6	81.8	76.7	78.3	87.0	84.8
Exports, nonpetroleum-wholesale prices	90.2	88.9	107.0	100.0	69.7	72.0	83.0	84.3	110.2	112.9
Agriculture-wholesale prices	90.2	100.0	102.8	100.0	98.3	102.8	113.2	116.9	120.8	127.7
Manufacturing-wholesale prices	103.9	107.4	114.1	100.0	89.9	88.1	88.1	92.2	94.9	97.7
b) RELATIVE TO HOUSING COMPONENT IN JAKARTA CPI										
Imports-wholesale prices	75.0	82.2	91.6	100.0	87.2	74.5	66.5	65.3	73.7	70.5
Exports, nonpetroleum-wholesale prices	63.9	65.8	91.6	100.0	66.4	65.6	71.7	70.4	93.3	93.8
Agriculture wholesale prices	63.9	74.0	88.0	100.0	93.6	93.6	97.8	97.5	102.4	106.2
Manufacturing-wholesale prices	73.6	79.5	97.6	100.0	85.6	80.3	76.1	76.9	80.4	81.2
c) MORGAN GUARANTY'S COMPETITIVENESS MEASURE	114.1	127.1	120.3	100.0	87.3	74.8	74.2	79.6	111.3	101.1

Part (a) and (b) are calculated from Table 3 in Warr(1986), op. cit., but some of our calculated numbers differ from his calculations in his Table 4.
Note that the series in this table and those in Table 6.6 are not comparable because the definition of wholesale price index changed over the two periods.
The competitiveness measure is from inverting the Morgan Guaranty real exchange rate

Source: Woo and Nasution

Exhibit 6

REVENUE STRUCTURE, 1969 TO 1983

(billions of Rupiahs)	69/70	70/71	71/72	72/73	73/74	74/75	75/76	76/77	77/78	78/79	79/80	80/81	81/82	82/83	83/84
TOTAL REVENUE	251.6	354.7	440.0	590.6	962.7	1753.7	2241.9	2906.0	3534.4	4266.1	6696.0	10277.0	12212.6	12410.3	14432.7
Tax on overall income	42.9	52.0	67.4	84.6	135.4	217.0	287.2	359.8	475.0	581.2	736.5	1045.5	1279.3	1605.2	1784.3
Tax on oil and gas	65.8	99.2	148.7	218.5	382.2	957.2	1246.0	1635.5	1940.7	2386.7	4259.6	7019.6	8627.0	8170.4	9570.2
Tax on overall domestic consumption	50.8	61.8	72.5	92.1	133.3	184.3	253.6	320.9	432.1	554.7	599.0	811.1	986.7	1266.5	1560.3
Tax on int'l trade	81.0	117.0	119.9	133.7	247.5	299.0	388.1	471.3	481.7	587.0	843.0	948.1	887.9	835.4	916.0
Property, IPEDA	8.0	10.0	12.0	15.1	19.5	28.0	36.6	42.2	52.5	63.1	78.0	87.2	98.5	105.7	117.4
Monies receipt	3.1	13.1	27.5	36.6	49.8	66.6	110.4	118.5	143.6	191.4	187.3	315.7	356.4	435.6	519.5
SHARE OF TOTAL REVENUE (%)															
Tax on overall income	17.1	14.9	15.3	14.3	14.8	12.4	12.8	12.4	13.5	13.6	11.0	10.2	10.5	12.9	12.4
Tax on oil and gas	26.2	28.0	32.0	39.8	39.5	54.6	55.7	56.3	55.1	54.1	63.6	68.6	70.6	65.8	66.3
Tax on overall domestic consumption	20.2	17.4	16.5	15.6	13.8	10.5	11.3	11.3	12.2	12.5	8.9	7.9	8.1	10.2	10.8
Tax on int'l trade	32.2	33.2	27.3	22.6	25.6	17.1	13.2	14.5	13.6	13.8	12.6	9.3	7.3	6.7	6.3
Property, IPEDA	3.2	2.8	2.7	2.6	2.9	1.6	1.5	1.5	1.5	1.5	1.1	0.9	0.6	0.8	0.9
Monies receipt	1.2	3.7	6.3	5.9	5.1	3.8	4.9	4.1	4.1	4.5	2.8	3.1	2.8	3.5	3.6
SHARE OF DOMESTIC REVENUE (%)															
Income tax	23.1	20.7	22.5	23.5	23.1	27.3	28.9	28.3	30.0	29.7	30.2	32.6	35.2	37.0	36.3
Domestic consumption tax	27.3	24.2	24.2	25.6	22.0	23.1	25.5	25.9	27.2	27.3	24.6	25.3	27.5	29.8	31.8
International trade	43.6	46.1	40.1	37.1	42.3	37.6	31.0	33.2	30.4	30.0	34.6	29.6	24.8	19.2	18.6
Property tax	4.3	3.9	4.0	4.2	3.3	3.5	3.5	3.3	3.3	3.2	2.9	2.2	2.6	2.5	2.7
Monies receipt	1.7	5.1	9.2	9.6	8.5	8.4	11.1	9.3	9.1	9.8	7.7	9.8	9.4	10.3	10.6
INDICATIVE RATIOS (%)															
Total revenue/gdp	9.3	11.0	12.0	12.9	14.3	16.4	17.7	18.0	18.6	17.8	19.5	20.9	20.9	19.8	19.6
Oil&gas tax/gdp	2.4	3.1	3.8	5.1	5.7	8.9	9.9	10.6	10.2	9.6	12.4	14.4	14.8	13.0	12.9
Overall income tax/gdp	1.6	1.6	1.8	1.9	2.0	2.0	2.3	2.3	2.5	2.4	2.1	2.1	2.2	2.6	2.4
Property tax/gdp	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Overall income tax/ domestic consumption tax	84.4	85.4	93.0	91.9	101.6	118.2	113.2	109.4	110.1	106.7	123.0	128.9	129.7	126.7	114.4
Overall export tax/ total revenue	2.8	2.8	6.4	5.5	7.1	4.8	2.7	2.1	2.3	3.9	5.8	3.8	1.1	0.7	0.7
MEMORANDUM ITEMS															
Tax on overall exports	7.8	23.8	28.1	32.7	60.6	78.3	61.6	61.7	88.2	166.2	189.1	305.8	128.4	82.5	104.8
Nominal GDP*	2710.8	3238.8	3672.8	4564.8	6751.4	10708.8	12642.5	15466.2	19033.8	24002.5	34348.2	48913.5	58421.8	62646.5	73697.6
GDP deflator (1978=100)	15.9	15.4	16.5	18.5	24.6	36.2	40.7	46.6	52.7	58.4	77.4	100.0	111.2	119.6	136.3

NOTES

*New GDP series used from 1978 onward.

Source: Woo and Nasution

Exhibit 7

EXTERNAL PUBLIC AND PUBLICLY-GUARANTEED DEBT OF INDONESIA

INDONESIA	1970	1973	1974	1975	1976	1977	1978	1979	1980
(end of period,US$m)									
Debt outstanding&undisb	2947.2	6693.6	9060.9	11741.2	14572.5	16134.6	19037.3	21199.8	24451.9
Debt outstanding&dis (DOD)	2443.2	5248.8	6350.2	7994.0	10001.6	11658.3	13149.7	13277.8	14971.3
Private Creditors	282.6	1218.9	1739.4	2990.1	4089.1	4583.1	4761.1	4767.8	5464.9
Total Debt Service (TDS)	82.2	207.5	291.6	523.5	760.6	1261.7	2062.1	2099.4	1758.5
Private Creditors	42.4	114.8	168.4	388.9	573.6	985.3	1632.9	1535.7	1127.6
Principal Ratios									
DOD/IGS (%)	205.5	158.8	85.2	113.8	114.0	106.7	116.3	85.5	67.4
DOD/GNP (%)	27.1	33.5	25.8	27.4	27.7	26.4	26.6	27.1	21.6
TDS/IGS (%)	6.9	6.3	3.9	7.5	8.7	11.5	18.2	13.5	7.9
TDS/GNP (%)	0.9	1.3	1.2	1.8	2.1	2.9	4.2	4.3	2.5
Proportion of DOD which									
is concessionary	78.0	75.3	71.3	60.8	53.4	52.2	53.2	51.5	50.2
bears variable i-rates	0.0	4.5	6.8	19.4	20.7	18.7	15.0	14.5	16.8
is from private creditors	11.6	23.2	27.4	37.4	40.9	39.3	36.2	35.9	36.5
Memorandum items									—
Proportion of debt service paid to private creditors	51.6	55.3	57.8	74.3	75.4	78.1	79.2	73.1	64.1
Central Bank net foreign asset	55.6	900.9	1494.0	-691.6	-157.0	1108.4	1312.0	3282.3	5868.4

Central Bank asset position calculated from IFS data prior to February 1987, using series 11 and 16c.
Bank Indonesia changed its valuation procedures in February 1987. The new procedures caused net asset position to improve quite substantially.

Source: Woo and Nasution

Exhibit 8

Trends in Aggregate Expenditure and Revenue

(In billions of rupiah)

	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80
Total expenditure	342.7	467.8	557.0	736.3	1164.2	1977.9	2730.3	3684.3	4305.7	5299.3	8076.0
Total Revenue	251.6	354.7	440.0	590.6	967.7	1753.7	2241.9	2906.0	3534.4	4266.1	6696.8
Foreign Borrowing	91.1	113.1	117.0	145.7	196.5	224.2	488.4	778.3	771.3	1033.2	1379.2
Foreign Borrowing as % of Expenditure	26.6	24.2	21.0	19.8	16.9	11.3	17.9	21.1	17.9	19.5	17.1
Foreign Borrowing as % of GDP	3.4	3.5	3.2	3.2	2.9	2.1	3.9	5.8	4.1	4.3	4.0
Memo Item GDP deflator, 1980=100	13.9	15.4	16.3	18.5	24.6	36.2	40.7	46.6	52.7	58.4	77.4

Source: Woo and Nasution

Exhibit 9

	1979	1980	1981	1982	1983	1984	1985	1986
a) General economic conditions								
Income growth in industrial nations, %	3.4	1.3	1.4	-0.4	2.7	4.7	3.0	2.4
Real price of oil in foreign purchasing power, 1980=100	67.7	100.0	119.2	124.1	111.6	109.1	104.3	59.1
Indonesian inflation rate, %	20.6	18.5	12.2	9.5	11.8	10.5	4.7	5.9
Indonesian growth rate, %	6.3	9.9	7.9	2.2	4.2	6.6	1.1	2.4
b) Balance of payments situation								
Merchandise exports to GDP, %	27.5	27.9	25.2	20.8	23.1	24.3	21.4	21.4
Current account balance to GDP, %	1.9	4.0	-0.7	-5.9	-7.8	-2.5	-2.1	-4.3
Reserves to imports ratio (weeks)	29.3	25.9	19.6	9.7	11.8	17.9	20.5	23.0
External long-term public debt service to export, %	13.5	7.9	8.2	10.6	12.8	14.7	20.1	29.3
c) Nonoil export sector (1974=100)								
Nonoil import price def -lated by housing cost	65.2	62.8	63.0	56.9	63.2	59.8	58.2	57.7
Nonoil export price def -lated by housing cost	99.0	101.0	91.1	80.5	105.9	102.9	98.4	98.9
Competitiveness a la Morgan Guaranty	111.3	101.1	89.0	79.5	98.4	91.8	92.7	109.7
Nonoil exports in physical volume	160.0	144.5	90.2	80.3	100.9	115.5	129.2	142.7
Nonoil exports in local purchasing power	184.6	170.8	111.8	93.5	148.1	175.0	188.5	222.4
Nonoil exports in foreign purchasing power	162.4	155.9	118.1	107.3	142.6	169.3	177.8	168.2

PI/PN proxies for 1983 are for post-March devaluation, and for 1986 are pre-September devaluation.
PI/PN proxies here are not comparable to those in Table 6.4 because of changes in definition of price indices. This is why the 1979 and 1980 figures in this table are different from Table 6.4.

Source: Woo and Pasution

Exhibit 10

EXTERNAL DEBT OF INDONESIA IN THE 1980s

(end of period, US$m)	1980	1981	1982	1983	1984	1985	1986
I) EXTERNAL PUBLIC AND PUBLICLY-GUARANTEED LONG-TERM DEBT							
Debt outstanding&undisb	24451.9	27211.0	32216.0	35492.0	36922.8	41872.6	48712.0
Debt outstanding&dis (DOD)	14971.3	15870.3	18515.0	21689.5	22861.9	26424.6	32119.0
Private Creditors	5464.9	5812.5	7403.4	9649.6	10048.6	11667.9	14556.0
Total Debt Service (TDS)	1758.5	2047.2	2246.6	2550.8	3251.0	4015.1	4401.0
Private Creditors	1127.6	1336.4	1374.3	1526.8	2069.9	2631.7	2549.0
Principal Ratios							
DOD/XGS (%)	67.4	63.7	87.1	108.8	103.2	133.0	212.8
DOD/GNP (%)	21.6	19.2	21.2	28.0	26.5	33.4	48.2
TDS/XGS (%)	7.9	8.2	10.6	12.8	14.7	20.1	29.3
TDS/GNP (%)	2.5	2.5	2.6	3.4	3.8	5.0	6.6
Proportion of DOD which							
is concessionary	50.2	48.5	42.7	37.3	34.9	35.1	NA
bears variable i-rates	16.8	17.8	20.0	22.7	23.7	21.7	NA
is from private creditors	36.5	36.6	40.0	44.5	[illegible]	43.6	45.3
Proportion of public debt service paid to private creditors	64.1	65.3	61.2	59.9	63.6	65.5	57.9
II) EXTERNAL PRIVATE NONGUARANTEED LONG-TERM DEBT							
Debt Outstanding & Disbursed	3142.0	3579.0	3290.0	3400.0	3800.0	3810.0	3800.0
Total debt service	1051.0	1173.0	1260.0	1116.0	960.0	1036.0	800.0
III) EXTERNAL SHORT-TERM DEBT	2775.0	3274.0	4787.0	4639.0	5384.0	5280.0	5000.0
TOTAL EXTERNAL DEBT	20888.3	22723.3	26302.0	29728.5	32045.9	35714.6	40919.0
MEMO							
Exports of goods & services (XGS)	22208.0	24926.3	21262.1	19932.6	22163.8	20014.5	15094.0

SOURCE: WORLD BANK DEBT TABLES AND COUNTRY REPORTS
Figures do not include LNG expansion credits.

Source: Woo and Nasution

Exhibit 11

	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88
Total expenditure	11716.1	13917.6	14355.9	18311.0	19380.8	22824.6	21421.6	23583.2
Total Revenue	10227.0	12212.6	12418.3	14432.7	15905.5	19252.8	17832.5	17236.1
Foreign Borrowing	1489.1	1705.0	1937.6	3878.3	3475.3	3571.8	3589.1	6347.1
Foreign Borrowing as % of Expenditure	12.7	12.3	13.5	21.2	17.9	15.6	16.8	26.9
Foreign Borrowing as % of GDP	3.0	2.9	3.1	5.3	4.0	3.7	3.5	5.9
Memo Item GDP deflator,1980=100	100.0	111.2	119.6	136.3	152.6	165.8	170.9	176.0

Source: Woo and Nasution

Exhibit 12

Average 1986 Monthly Crude Spot Price for Indonesian Oil

Price in dollars per barrel
for Indonesia Minas-34

January	24.25
February	18.00
March	12.90
April	10.45
May	11.35
June	11.15
July	9.50
August	11.25
September	12.70
October	12.65
November	13.00
December	14.25

Source: Petroleum Intelligence Weekly, London. Various issues.

Average U. S. Refiner Acquisition Cost of Imported Crude Oil

Price in dollars per barrel

1976	13.48
1977	14.53
1978	14.57
1979	21.67
1980	33.89
1981	37.05
1982	31.87
1983	28.99
1984	28.63
1985	26.75
1986	14.55

Source: Energy Information Administration/Monthly Energy Review December 1986

Part I. Mid-point rates, unless otherwise stated
Part I. Cours moyen, sauf avis contraire

End of period – Fin de la période

National currency per U.S. dollar — Valeur du dollar des Etats-Unis en monnaie nationale

Country or area–Pays ou zone. (unit–unité)	1981	1982	1983	1984	1985	86Q1	86Jun	86Jul	86Aug	86Sep	86Oct	86Nov
Indonesia – Indonésie (rupiahs)	644.000	692.500	994.000	1 074.0	1 125.0	1 125.0	1 131.0	1 131.0	1 132.0	1 633.0	1 640.0	1 650.0
Japan – Japon (yen)	219.900	235.000	232.200	251.100	200.500	179.600	145.000	154.300	156.100	153.600	161.500	162.400

	86Dec	87Jan	87Feb	87Mar	87Apr	87May
Indonesia – Indonésie (rupiahs)	1 641.0	1 633.0	1 644.0	1 644.0	1 641.0	1 649.0
Japan – Japon (yen)	159.100	152.500	153.050	145.800	139.500	144.000

Source: "Monthly Bulletin of Statistics," Statistical Office, United Nations Volume XLI, No. 2 (February 1987)and Volume XLI, No. 8 (August 1987)

Balancing Payments in The Gambia (A)

The Gambia is achingly poor. Its population averages an income of only $260 per year (1984). Life expectancy in the country, at 42, is the third lowest in the world, after Sierra Leone and Guinea Bissau. Its economy, centered around the production and trade of groundnuts (i.e. peanuts), fluctuates with world groundnut prices, drought and pest infestations. A tiny, vulnerable West African country of 800,000 people, it is surrounded on three sides by Senegal, on which it relies for its security. Ironically, with all its problems, The Gambia is also regarded as Africa's freest democracy, with a high level of civil rights, individual liberties, and fair elections.

Geography: On the map, its boundaries are striking. What starts on the Atlantic coast as an orderly, if narrow, box, dissolves into a serpentine echo of the Gambia River at its center, extending ten kilometers from each bank. One historian describes it as "perhaps the most ridiculous boundary ever drawn." The borders were determined by the British specifically to deny the French access to the Gambia River, in part to make it more valuable should they trade it to the French for some other colonial territory.

This serpentine state has three geographic regions. The mangrove swamps border the river, lining it with towering trees (and providing an excellent breeding ground for the thriving population of mosquitoes). The wet mud makes landing impossible at most points. Beyond the swamps are the "banto faron", the floor of the river valley covered by clayey soils that are flooded in the rainy season but arable in the dry season. Although the upper reaches of this zone provide fertile ground for flood recession rice farming, along lower reaches the salinity of Gambia river flood water makes farming impossible. Finally, the plateau land contains soils high in iron - poor for most crops, but excellent for the production of groundnuts. The Gambia's subtropical climate has two seasons: July through October is warm and rainy, and January through May is cool and dry, intermittently punctuated by a Saharan wind known as the harmatta.

Ethnic Groups, Language and Religion: Living in this subtropical climate is a population comprised of five major ethnic groups and a number of smaller ones. The Mandinka comprise about 37% of the population, the Fula 17%, the Wolofs 13%, the Jola 7%, the Serahuli 6% and other groups adding up to the remaining 20%. Although English is The Gambia's official language, only a small portion of the population speak it. Wolof and Mandinka are used by traders and observant Moslems learn Arabic.

Case prepared by Andrew Stone and Steven Radelet under the supervision of Prof. Shantayanan Devarajan and Prof. James Duesenberry.

More than 85% of Gambians are Sunni Moslem. Islam was spread by the Marabout (a Mandinkan people) during the 50-year 19th century conflict known as the Soninke-Marabout Wars. Christians, comprising less than 10% of the population, are concentrated in the capital, especially among the Aku people. Others, like the Jola people, adhere to traditional African beliefs.

History: Relatively little is known about The Gambia before colonial times, in part because there is no written history. It was part of the great Mali empire of the 15th century that extended through much of central and western Africa. The Portuguese became the first Europeans to sail up the Gambia River in 1455, but it was the British who later established a fort and attempted to control the trade of beeswax, ivory, gum, hides and human beings that flowed through the mouth of the Gambia. The Gambia was a major focus of the slave trade in the 18th century. Said one observer:

> The same Merchants bring down Elephants Teeth and some Years Slaves to the Amount of two thousand most of which are Prisoners taken in War .... Their Way of bringing them is tying them by the Neck with Leather-Thongs at about a Yard distant from each other, 30 or 40 in a String, having generally a bundle of Corn or an Elephant's Tooth upon each of their Heads[1].

In 1808, the British outlawed the slave trade. Further trading took place surreptitiously (much of it by Americans). Enslavement of Africans by each other was not effectively controlled until early in the current century. Part of this shameful aspect of colonial history was chronicled by Alex Haley, who traced his ancestry to The Gambia in the bestselling 1976 book Roots.

In the 1830s, the groundnut was introduced to The Gambia from Brazil. This plant thrived on the iron-rich soils of the upper plateaux, and quickly became the center of the monetized economy. Traditional staple crops -- primarily millet, sorghum, and maize -- continue to be cultivated to this day. Since independence, rice production has grown to equal the traditional staples in tonnage.

Until late in the 19th century, the British limited their involvement in this area to protection of trading posts and domination of river trade. Malaria and other insect-borne diseases took a mighty toll on Europeans, discouraging ventures into the hinterland from the inland capital of Bathurst (now Banjul) and a few riverine trading centers. During the period from the 1830s to the 1880s of the Soninki-Marabout wars, the British ignored repeated requests from tribal leaders to assert authority and restore peace to the area, intervening only when their own settlements were endangered or, finally, when the French threatened to quell the continuing and disruptive wars. The British and French frequently skirmished for

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[1] More, Francis, Travels in the Inland Part of Africa (London:1738) as cited in Harry A. Gailey, A History of the Gambia (New York: Frederick A. Praeger, Publishers, 1965)

control of the Senegambia region. The two countries signed a treaty in 1783, establishing borders similar to the present borders delineating Senegal and The Gambia. The British ran their colonies for profit, although they actually channelled profit from The Gambia into the more favored colony of Sierra Leone. Throughout much of the 19th century, the British operated under the assumption that they would ultimately trade The Gambia to the French for territory adjacent to Sierra Leone or some other British colony.

Even when the borders of The Gambia became more clearly established in 1889 and Britain assumed greater responsibility for the security of its colony, it did little for the education, health and welfare of the indigenous population. Britain's policy was one of "indirect rule." Indeed, the British made a distinction between the "colony" which included only the immediate environs of Bathurst, and the "protectorate" which included the rest of what is now The Gambia. Local chiefs or officials appointed by the British were empowered to act as executives of designated districts. Buffeted by the long period of internal warfare, the indigenous population passively accepted British rule until well after World War II.

The indirect British rule meant minimal investment in the people. Little was allocated to health or education initiatives. Hence, even today, The Gambia's literacy rate is only about 20%. Further, social investment was highly concentrated in the capital city (as were the British). The rest of the country was neglected until the end of the 1940's, when the British began several efforts to promote food crop production and diversify the economy. Various projects attempted without profit to promote production of rice, timber and poultry and excavation of minerals.

The British regarded Gambian farmers as "backwards" for failing to adopt agricultural methods and inputs which, in fact, were quite unprofitable compared to traditional techniques. British efforts to encourage the use of fertilizer and the mechanization of groundnut and rice farming by Gambians failed.

Independence: Gambians were slow to join other Africans in calling for independence, but with the formation of political parties and the inception of universal suffrage, pressure grew. The People's Progressive Party was formed in the late 1950s. More militant than other parties, it gained its main support from rural areas rather than Bathurst. Under the leadership of Dawda Jawara, an ex-veterinary officer, it won the 1962 pre-independence national elections. Jawara (now Sir Dawda Kairaba Jawara) has ruled ever since, first as Prime Minister and, since 1970, as President. The Gambia is one of the few African countries where rural dwellers form the constituency of the ruling political party. Independence came peacefully in 1965. As British culture did not penetrate beyond the capital, its primary contribution to The Gambia was the British-style government it left behind. Following the adoption of a new constitution in 1970, the Gambian government was led by President Jawara, with a unicameral legislature democratically chosen in fair and free elections. Political parties are free to form and campaign, there is an independent judiciary, and there is no censorship of either the printed or spoken word. In these terms, The Gambia is a model of freedom.

While The Gambia's government has been remarkably stable, its continuity was significantly threatened in July, 1981 when some members of the Field Force (a government paramilitary group -- The Gambia did not have an army at the time) took over parts of the capital city of Banjul, some communications facilities, and a Field Force base. Left-wing rebels declared the establishment of a "National Revolutionary Council" under the leadership of Kukoi Samba Sanyang. President Jawara, in London for the wedding of Prince Charles and Lady Diana, called upon the aid of Senegalese troops as provided by the two nations' mutual defense and security treaty. After 10 days the coup attempt was quelled, but the conflict left over 1000 dead. Most of the Senegalese troops left shortly afterwards; however, some troops remain today to guard the State House and the residence of the President.

In December 1981, with The Gambia's security clearly dependent on Senegal, the two countries agreed to form the Senegambia Confederation. Since that time, a Confederal Parliament has met regularly, and the two governments have signed protocols covering defense, transportation, arbitration, communications, and cultural exchange. Negotiations continue on a free trade zone, a monetary union, and other issues. Fearing complete domination by its larger neighbor, The Gambia has moved slowly and cautiously in negotiating the Confederal agreements. Senegal, on the other hand, is interested in achieving integration as quickly as possible.

The Senegalese desire for unification predates the Confederal negotiations. The Gambia effectively divides Senegal into two regions, making it costly and inconvenient to transport goods from the northern region (where Dakar, the capital, is located) to the southern region, the Casamance. Trucks moving from northern Senegal to the Casamance must cross two borders and take a congested ferry across the Gambia River. The Gambia has considered building a bridge/dam across the river, but for both economic and political reasons, it has not been built. A demographic split follows from Senegal's geographic split: Wolofs dominate the northern section and Jolas populate the Casamance. In 1960, the first President of Senegal, Leopold Senghor, promised that the government would hold a plebiscite on independence for the Casamance before 1980. The plebiscite was never held. Secessionist sentiment is high in the Casamance. Some Senegalese believe that these economic and political problems would be solved if The Gambia and Senegal were unified.

With this history in mind, many people both inside and outside The Gambia believe that in the event of another uprising in The Gambia, Senegal might use the opportunity as a pretext to take power.

<u>The Modern Economy</u>: The Gambia is often cited as a classic monoculture, a one-crop economy centered around the groundnut. In 1984, agriculture employed 80% of the population, directly providing 28% of GDP in 1984/85, down from 40% at the time of independence (see Appendix A). Groundnut agriculture brings in an estimated 20,000 or more "strange farmers" who cross the borders seasonally from Senegal, Mali, and Guinea-Bissau to grow groundnuts, either as laborers or independent farmers.

While their efforts to diversify the agricultural economy failed, the British did build forward linkages to groundnut production in the form of decorticating plants and trade facilities, including the Banjul port. Most of the small manufacturing sector (7% of GDP by 1984) is based on crushing groundnuts and related processes.

In 1948, the British established a Groundnut and Oil Seed Marketing Board (now the stated-owned Gambian Produce Marketing Board, or GPMB), which set a standard annual price for groundnuts, then graded and purchased all groundnuts for export. The price was to be based on world prices and the previous year's experience. If it was set too low (that is, if the price paid to farmers was below the world price), the surplus garnered by the Marketing Board was to be used to pay farmers in years of low world prices when the Gambian price was likely to have been set too high. Differentials between groundnut prices in The Gambia and Senegal have invariably resulted in smuggling (both ways) across the extensive border.

Aside from the groundnut cash crop and a small amount of cotton production, agriculture is dominated by the production of crops for domestic consumption. Those crops include millet, sorghum, cassava, maize and rice. The Gambia remains a net importer of rice, the favored grain of its urban population.

Frequent droughts devastate the Gambian economy and starve the rural population. In many years, rural people face a "hungry season" while a new crop is growing, when there is little food available and much agricultural labor to be performed. A 1980 World Bank paper reported that:

> ...the nutritional status of The Gambia's rural population remains highly unsatisfactory, year-round, for most women and small children (caloric intake estimated at only 60-70% of the norm), but during 2-4 months per year (hungry season) for almost the entire rural population[2].

The economy has diversified somewhat since independence, with the small tourism, manufacturing, and fisheries sectors growing most rapidly. But by far the most important non-agricultural activity is trade. The Gambia's location, open borders, and low tariff structure make it an active entrepot for trade with the rest of the sub-region. Goods are imported into The Gambia and then re-exported to Senegal, Mali, or Guinea-Bissau. Some of this re-export trade is legal, with goods transshipped to landlocked Mali or more remote areas of other neighboring countries. However, much of what is legally imported into The Gambia is smuggled into nearby countries to take advantage of The Gambia's low tariff structure. Trade represented 16 percent of GDP in 1984/85, and re-exports are now the country's leading export--even after deducting the value of imports for re-export.

Economic Performance: The ten-year period following independence was one of exceptional economic growth and financial stability. Expanding world trade maintained high international commodity prices for groundnuts and oil seed

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[2] World Bank, Basic Needs in the Gambia, Washington, 1/24/80.

products. At the same time, rapid expansion internationally in the production of manufactured goods kept the price of imports low. Government investment focused on the development of infrastructure to connect rural producers to markets, and social initiatives aimed at improving the health and education of the population. By 1982, 67% of boys and 38% of girls were enrolled in primary schools.

Between 1965/66 and 1973/74, groundnut production rose and, with it, exports and government's surplus and financial reserves. The annual rate of inflation was 6 percent, the current account of the balance of payments was in surplus, foreign exchange reserves grew to the equivalent of 11 months of imports, and real gross domestic product (GDP) grew by more than 6 percent per year. The dalasi, which had been fixed at 5 dalasi equal to one pound sterling, was actually revalued 20 percent to D4 = PST 1 in March, 1973.

However, the economy deteriorated in the late 1970s and early 1980s until in early 1985, The Gambia faced a severe balance of payments crisis. The crisis was caused by both external and internal factors. Externally, recurrent Sahelian droughts, low world prices for groundnuts, rapidly rising prices for imports (including petroleum products), high interest rates, and declining foreign aid flows all contributed to the initial imbalances. Internally, poor planning, mismanagement, and inappropriate fiscal and monetary policies mad a bad situation worse.

The economy began to deteriorate soon after the government introduced The Gambia's First Development Plan in 1975. The First Plan "envisaged a comprehensive development effort aimed at achieving both relatively rapid economic growth and major improvements in the welfare of the population, particularly the rural population[3]." The government invested in new stated-owned enterprises and dramatically increased spending on development projects, government wages (mainly through an increase in the number employed) and subsidies on rice, fertilizer, electricity, and transportation. Revenues (derived mainly from import duties) did not increase as rapidly as expenditure, and the budget deficit[4] grew from an annual average of 2 percent of GDP between 1965/66 and 1974/75 to 15 percent of GDP between 1977/78 and 1984/85.

The government borrowed heavily to finance the deficits. Between 1974/75 and 1985/86 The Gambia's external debt grew from $11 million (9 percent of GDP) to $250 million (220 percent of GDP). Donors encouraged heavy borrowing, pushing projects and loans with little apparent concern for the economy's absorptive capacity. Moreover, donors financed mainly new projects -- very little was spent on maintenance and rehabilitation. What the government could not borrow abroad it borrowed locally: its

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[3] Five Year Plan for Economic and Social Development, 1981/82 - 1985/86, The Government of The Gambia, Banjul, p. 12.

[4] Throughout this paper, the budget deficit is calculated on a commitment basis (i.e., including payments due as opposed to payments actually made) and excluding grants.

indebtedness to the domestic banking system grew from virtually zero in 1975/76 to over D100 million (12 percent of GDP) in 1985/86. The large budget deficits, high world inflation and high interest rates led to dramatic increases in both the import bill (from 34 percent of GDP in the early 1970s to 56 percent of GDP between 1975/76 and 1984/85) and debt service obligations (from 2 percent of domestically produced exports in 1975/76 to 198 percent in 1985/86).

Despite the high level of government spending and public and private investment averaging 22 percent of GDP per annum, real GDP per capita fell 3 percent between 1976/77 and 1984/85. Real domestically produced exports between 1980/81 and 1984/85 were less than half of what they were between 1974/75 and 1977/78. The government's huge increases in spending had failed to expand the economy's productive base as planned. The Minister of Finance and Trade would later observe that "(i)n retrospect, the planned development expenditure was too large, too unfocused, and not well enough managed to have had a sustained positive effect on economic growth and development[5]."

Another factor in the poor growth and export performance was a marked deterioration in the groundnut sector. Groundnut exports, which accounted for 95 percent of domestically produced exports in the early 1970s, fell 60 percent in real terms between 1975/76 and 1984/85. Several factors contributed. The Sahelian drought (rainfall between 1980/81 and 1984/85 was 30 percent less than it had been in the late 1970s); a 35 percent decrease in real world prices between 1976/77 and 1984/85; and the financial weakness of the Gambia Produce Marketing Board (GPMB), the statutory board responsible for groundnut processing and marketing. This weakness--which led to low farmgate prices paid to farmers--was caused by the drought and low world prices; the increasingly overvalued exchange rate; poor management; subsidies on rice, groundnut oil, and fertilizer; and the government's extraction of D40 million from GPMB reserves in the late 1970s to cover government budget deficits.

The transfer of resources from farmers to the government is illustrated by the rapidly growing civil service wage bill relative to groundnut farmer-earnings. Between 1974/75 and 1984/85, civil service earnings increased 57 percent in real terms and grew from 38 to 48 percent of recurrent expenditure (excluding debt service). In 1974/75, the government wage bill was approximately 27 percent of farmer incomes from groundnuts; by 1984/85 it had grown to 202 percent.

High world inflation and the fall in groundnut prices led to a decline in the terms of trade by 25 percent between 1976/77 and 1984/85. Rapidly rising imports and debt service obligations and falling exports combined to create deficits on the current account of the balance of payments averaging over 20 percent of GDP in the early 1980s. Private businesses and

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5 "Memorandum by the Honourable Minister of Finance and Trade on the Economic Recovery Programme (ERP)," Ministry of Finance and Trade, Banjul, p. 4.

individuals reacted to the worsening economic situation by investing outside of the country, widening the financing gap further[6]. This capital flight was the result not only of the overvalued exchange rate, but of ceilings of 6 percent on interest rates. At the same time, developed countries cut their aid programs worldwide and The Gambia received lower levels of official loans and transfers[7]. Throughout this period, the government financed the remaining deficits by drawing down foreign exchange reserves, borrowing externally, and not paying all of its debt service obligations.

The government introduced a package of stabilization measures in early 1984, including a 25 percent devaluation of the dalasi (from D 4 = Pound Sterling (PST) 1 to D 5 = PST 1). But the measures were too little, too late to stop the economic decline. By the middle of 1985, The Gambia could no longer finance its deficits by the methods described above. Gross foreign exchange reserves had fallen to the equivalent of two weeks of imports, debt service arrears topped $75 million, and the government could no longer borrow abroad. The premium for foreign exchange in the parallel (or street) market reached 50 percent. Shortages emerged for many commodities, notably rice, fuel, and fertilizer; and the annual rate of inflation reached 21 percent. With reserves exhausted, external borrowing impossible, and shortages emerging, the government turned to the donors for assistance.

Relations with the Donors

The Gambia's major donors include the IMF, the World Bank, the United Kingdom, the United States, and the African Development Bank. The most important is the IMF, mainly because an agreement with the Fund signals its "stamp of approval," making it easier to obtain financing from other donors. An IMF Standby Agreement (which included the 25 percent devaluation as a condition) was cancelled in 1984 after the government failed to stay within prescribed credit limits. The Fund was unwilling to negotiate a new program without fundamental changes, including a further devaluation of the dalasi; a sharp increase in interest rates; strict limits on Central Bank credit to the government and parastatals; a moratorium on new non-concessional foreign borrowing; increases in import duties; and reductions in government spending, including a wage freeze, some retrenchment of government workers, and elimination of the fertilizer and rice subsidies.

The Fund also wanted the government to raise sharply the farmgate price of groundnuts. The price offered by the GPMB was D1100/tonne, whereas the heavily subsidized Senegalese farmgate price (paid in CFA francs -- a fully convertible currency) was the equivalent of D2200/tonne. The Fund wanted the Gambian price to approach the Senagalese price in order to stop cross-border flows and protect the GPMB's foreign exchange earnings. It wanted

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6 Net private capital inflows were negative in each year after 1978/79.

7 Net official loans and transfers, which averaged $66 million (28 percent of GDP) between 1979/80 and 1981/82, averaged only $40 million (18 percent of GDP) between 1982/83 and 1985/86.

the high price even though parity with the Senegalese price would entail a D100 million loss for the GPMB - -nearly 10 percent of GDP. The Fund envisaged that the loss would be covered by a transfer from the government budget, financed by concessional foreign borrowing or a foreign grant. Their rationale for this strategy was that it would maximize the government's official foreign exchange earnings. An agreement with the IMF would make $15 million -- 10 percent of GDP -- available to the government, as well as pave the way for financing from other donors.

The World Bank weighed in with its Country Economic Memorandum of May, 1985, which bluntly described the nature and origins of The Gambia's economic crisis and recommended a wide range of organizational and policy reforms to remedy the crisis. Many of the Bank's recommendations were identical to the Fund's (including exchange rate and interest rate reform and a reduction in the government budget deficit, particularly through reducing the wage bill). In addition, the Bank recommended reorganizing several ministries and parastatals, divesting some parastatals, and reorienting the floundering public investment program by submitting new investments to stricter evaluation criteria. The Bank wanted to see higher groundnut prices, but not nearly as high as the Fund envisaged. Bank staff felt that if the dalasi were devalued and interest rates were raised, farmers (or traders) who sold groundnuts across the border in Senegal would be willing to exchange their CFA francs for dalasis. If successful, this strategy would induce foreign exchange inflows without the GPMB's incurring a large loss. A World Bank program (with co-financing from the African Development Bank and the United Kingdom) would give the government access to approximately $35 million--23 percent of GDP--in grants and concessional loans. However, the World Bank could not negotiate an agreement until the government reached an agreement with the Fund. The other major donors, too, were unwilling to provide any financing to The Gambia in the absence of a Fund program.

	1974/75	1975/76	1976/77	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83	1983/84	1984/85
Gross Domestic Product (million dalasi, current prices)											
Agriculture	70.50	92.50	103.90	96.90	126.10	112.30	111.90	154.00	195.90	167.00	188.20
Industry	20.80	27.20	33.30	43.00	52.40	48.10	59.90	48.80	45.70	87.30	89.30
Services	112.20	125.50	171.40	175.40	182.90	199.10	195.50	204.20	220.00	275.80	295.70
of which: Trade	49.10	43.10	75.70	63.20	62.10	64.60	59.60	52.70	48.40	94.00	108.90
Government	20.90	29.20	37.20	43.40	46.20	50.80	53.10	61.40	72.90	79.10	80.70
GDP at Factor Cost	203.50	245.20	308.60	314.90	361.40	359.50	367.30	407.80	461.60	520.90	576.20
Net Indirect Taxes	15.63	27.69	35.95	30.96	59.62	60.93	42.07	53.58	66.30	77.64	96.45
GDP at Market Prices	219.13	272.89	344.55	345.86	412.02	420.43	409.37	461.38	527.90	598.54	672.65
Central Government Operations (million dalasi)											
Revenue	31.57	45.06	62.91	82.21	75.47	95.93	76.20	87.33	100.03	120.78	146.02
Grants	2.76	1.90	0.00	19.80	13.50	10.80	24.30	56.80	16.90	26.00	32.30
Current Expenditure	31.03	39.90	54.50	61.60	68.50	87.70	89.30	116.10	112.60	140.60	151.42
of which: Salaries	11.82	12.66	22.71	28.22	33.08	35.75	36.72	44.54	52.82	55.25	58.32
Development Expenditure	9.58	11.30	31.40	69.10	52.00	64.07	69.80	68.80	43.77	70.30	109.10
Surplus/Deficit											
Excluding Grants	-9.04	-6.14	-22.99	-48.49	-42.03	-55.84	-82.90	-97.57	-56.34	-90.12	-114.49
Including Grants	-6.28	-4.24	-22.99	-28.69	-31.53	-45.04	-58.60	-40.77	-39.44	-64.12	-82.19
Balance of Payments (millions of dollars)											
Exports	45.85	34.02	45.99	37.66	47.02	48.23	28.38	34.56	61.50	85.46	62.00
of which: groundnuts	43.49	31.32	42.32	29.56	32.31	32.34	15.70	14.15	259.92	26.90	16.18
re-exports	0.79	1.14	2.04	4.80	11.21	10.61	7.62	17.03	33.69	55.22	44.07
Imports	-45.69	-64.36	-72.85	-97.70	-117.53	-166.84	-133.69	-100.66	-102.81	-125.62	-89.56
Services	0.24	-2.36	-2.34	-15.62	-17.41	-21.43	-25.37	-29.59	-25.90	-40.58	-21.99
Current Account Balance	-3.56	-32.73	-29.24	-75.65	-87.93	-141.98	-130.68	-95.69	-67.21	-80.73	-48.55
Capital Account Balance	3.25	1.75	8.38	31.23	22.94	26.37	55.33	34.05	-1.56	17.96	30.87
of which: Official Loans & transfers	4.17	2.82	12.23	27.29	25.16	57.28	64.87	61.73	39.17	49.70	33.50
Overall Balance	-0.30	-30.98	-20.86	-44.43	-54.99	-115.60	-75.35	-61.64	-68.78	-62.77	-17.68

Note: The overall balance is financed through transactions with the IMF or changes in reserves or debt service arrears.

Exchange Rates											
Dalasi/Pound	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	5.00	5.00
Dalasi/Dollar	1.85	2.22	2.32	2.13	1.86	1.72	1.97	2.39	2.85	2.76	4.00
Consumer Price Index	112.40	135.10	157.30	173.43	186.50	195.85	211.90	228.75	250.05	289.03	351.93