NBER WORKING PAPER SERIES

Some Thoughts on the Role of Fiscal Policy in Stabilisation and Structural Adjustment in Developing Countries

Willem H. Buiter

Working Paper No. 2603

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
May 1988

The research supported here is part of the NBER's research program in International Studies. Any opinions expressed are those of the authors and not those of the National Bureau of Economic Research.

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ABSTRACT

The paper analyses the role of fiscal policy in the restoration of internal and external macroeconomic equilibrium and in achieving structural adjustment i.e. major changes in the patterns of sectoral and intertemporal resource allocation. The focus is on developing and new industrial countries in need of both stabilisation and structural adjustment. The external transfer problem and the associated internal fiscal and real resource transfer problems are analysed with special emphasis on possible causes for the breakdown of the internal and external transfer processes. The concepts of national and public sector solvency are used to evaluate the mutual consistency and feasibility of fiscal, financial and monetary plans. Special attention is devoted to the links between the fiscal deficit and inflation and to the inflation tax.

Willem H. Buiter
Department of Economics
Yale University
37 Hillhouse Avenue
New Haven, CT 06520

1 Introduction

The processes of stabilisation and structural adjustment in developing countries and the fiscal policy options that are available can be understood only by recognising the often extreme initial conditions facing many of the countries concerned. These initial conditions are macroeconomic disequilibrium, both internal and external, and structural disequilibrium.

Macroeconomic disequilibrium is a syndrome containing many or most of the following ingredients. (See e.g. Ahamed [1986], Dervis and Petri [1987] and Sachs [1987]. A large (and often unsustainable) public sector financial deficit. A large stock of external debt (often public or de-facto publicly guaranteed), and severely restricted further access to external credit on commercial terms. A history of capital flight, resulting in a stock of external assets that is beyond the reach of the domestic fiscal authorities. A large incipient current account deficit, sometimes repressed by external credit rationing and by foreign exchange controls imposed by the domestic authorities. An overvalued real exchange rate. A high, although sometimes partially repressed, rate of inflation and significant recourse to the inflation tax as a source of public sector revenue. A large internal public debt (in the more advanced developing countries) competing for scarce domestic savings in a generally repressed domestic financial system. A narrow and often inequitable and inefficient public sector revenue base. Real wages in excess of market-clearing levels (and frequently highly index-linked) in the formal or the urban sector and widespread unemployment and underemployment of labour.

Structural disequilibrium refers to the need for significant changes in the patterns of resource allocation, production and absorption; for major changes in the ***modus operandi*** of important markets, including the domestic

financial markets, the foreign exchange market (and the terms of private access to external credit), the domestic labour market and the domestic goods markets: for far-reaching changes in the system of property rights, rules, regulations and laws that govern production, exchange and distribution and for changes in the size and scope of the tasks performed by the public sector.

These twin disequilibria, which often interact and reinforce each other, tend to occur against a background of mass poverty, rapid population growth, and major social, cultural and political transformations. Political stability is often in doubt, both as regards the survival of incumbent administrations and as regards the viability of the very institutions of government. Credible precommitments to any long-term economic strategy are hard to come by in such an environment. Scarce administrative and managerial skills create further obstacles to the design and implementation of economic reforms.

Many of the disequilibria and policy dilemmas just referred to have been encountered also in the industrial countries. The USA today is characterised by unsustainable fiscal and external current account deficits. Hyperinflations occurred in Austria, Germany, Hungary and Poland in the 1920s. Many Western European economies have been diagnosed as suffering during the 1970s and 1980s from a whole array of structural rigidities, sometimes referrable to collectively as "Eurosclerosis", that prevent a full utilisation and efficient (re)allocation of resources.

The range and severity of the stabilisation and structural adjustment problems faced today by e.g. the IMF's 15 highly indebted countries[1] and by a large number of sub-Saharan African countries[2] are such, however, that a fresh restatement and adaptation of conventional macroeconomic analysis focussed on these countries' problems seem warranted.

This paper is both selective and eclectic in its coverage and is only intended as a catalyst for a wider-ranging and deeper discussion of the issues (see Buiter [1986] for an analysis focussed on developing country responses to a range of external shocks). The variety of economic systems, stages of economic development, problems and policy issues among the developing and new industrial countries is such, that it is very hard indeed to find a useful middle ground between the Scylla of ninety-odd book-length country studies and a dozen exhaustive comparative analyses and the Charybdis of a-historical, institution-free abstractions. Section 2 covers the external and internal transfer problems. Section 3 considers possible causes for the breakdown of the internal and external transfer processes. Section 4 deals with national solvency and Section 5 with government solvency. In Section 6 the inflation tax is considered in some detail and in Section 7 a recent quantitative approach used by the World Bank to evaluate the consistency of certain aspects of a government's fiscal, financial and monetary strategy is evaluated.

2. Fiscal policy and the external and internal transfer problems

To reduce the external current account deficit or to increase the surplus is to increase the ***external transfer***. To realise this increased transfer of real purchasing power to the rest of the world an ***internal reallocation real resources*** is required: production and productive resources must be moved from the non-traded goods sector to the traded goods sector, i.e. to the production of exports or import competing goods. This requires a decline in the relative price of non-traded goods and, if the country has any international market power, a lower relative price of exports: the increased external transfer can be effected only through a lower real exchange and a worsening of the terms of trade. It has by now

become established (if sloppy) usage, to refer to the *increase* in the external transfer as the external transfer. I reluctantly adopt this usage where it does not lead to ambiguity or error.

In many developing countries (and indeed in such industrial countries as the USA), an unsustainable or undesirable external deficit tends to be associated, both statistically and causally, with an unsustainable or undesirable public sector financial deficit. The reduction of the external deficit in such cases requires the reduction of the public sector deficit.[3] This can be achieved either through cuts in public spending or through an increase in public sector current revenues: taxes, income from tariffs, public sector fees and charges etc. The expression *(internal) fiscal transfer* will be used to refer both to government revenue increases and to public spending cuts.[4]

The fundamental economy-wide financial balances identity in equation (1a,b) is a good place to start an analysis of the central role of fiscal policy in stabilisation and structural adjustment.

$$S^P - I^P + S^G - I^G \equiv CA \qquad (1a)$$

$$CA \equiv TB + \frac{EA^*}{P} - i^*\frac{E}{P}\left[D^*-R^*\right] \equiv \frac{E}{P}\,\Delta(R^*-D^*) \qquad (1b)$$

[5]

S^P is private saving, I^P private domestic capital formation, S^G public sector saving, I^G public sector domestic capital formation, CA the current account surplus on the balance of payments and TB the trade balance surplus, all measured in terms of real GDP units. A^* is net foreign aid and other current transfer receipts (such as remittances)[6], D^* the stock of foreign debt and R^* the stock of foreign exchange reserves, all denominated in terms of foreign currency. E is the nominal spot exchange rate, P the domestic GDP deflator and i^* the foreign nominal interest rate.

It is sometimes informative to present the financial flows in equations (1a,b) "corrected" or "adjusted" for asset revaluations, i.e. for capital gains and losses on outstanding stocks of assets and liabilities. In practice this means correcting for the effect of inflation on the real value of nominal assets and liabilities and for the effect of exchange rate changes and inflation on the real value of foreign-currency-denominated financial claims. While there are no issues of principle involved in these measurement or presentational conventions, it is often helpful, since economic theory specifies preferences and production technologies as defined over real commodities, to express our uses and sources of funds in the same manner. Similarly, measuring these asset revaluations-corrected stocks and flows relative to some "scale variable" such as (trend) real GDP is helpful when the scale variable is, implicitly or explicitly, used to define a solvency constraint or other feasibility constraint. These issues are considered further in Sections 4 and 5.

Equations (2a,b) below introduce the distinction between private and public external debt. This distinction has often been more important formally than substantively. The debt crisis since 1982 has been a recent reminder of the fact that many *de jure* or formally private liabilities are *de facto* publicly guaranteed. Private foreign assets often escape the grasp of the domestic fiscal authorities. Whether one labels this (privately rational) external portfolio diversification or capital flight, one of its consequences is that the tax base becomes narrower, implying the need for higher tax rates on the remaining tax base, increased recourse to seigniorage (the inflation tax) or increased borrowing.

Private and public saving are defined in (2a,b)

$$S^P \equiv Q - J - T + i\frac{B}{P} - i^*\frac{ED^{*P}}{P} - C^P \qquad (2a)$$

$$S^G \equiv J + T + \frac{EA^*}{P} - i\frac{B}{P} - i^*\frac{E}{P}(D^{*G}-R^*) - C^G \qquad (2b)$$

Q is domestic income or product; J is the cash return on the public sector capital stock; i is the nominal interest rate on domestic-currency-denominated public debt, assumed to be held only by the domestic private sector (the Central Bank is included in the consolidated public sector identity (2b)). T is domestic taxes net of current domestic transfers and subsidies; C^P is private consumption and C^G public sector consumption. D^{*P} is private external debt (including private sector arrearages and D^{*G} public external debt (including public sector arrearages). Note that

$$D^* \equiv D^{*P} + D^{*G} \qquad (3)$$

The trade balance surplus is the excess of the value of exports over the value of imports. Let X and M denote export and import volume respectively and P_X, P_M and P_N the domestic currency prices of exports, imports and non-traded goods.

$$TB \equiv \frac{P_X}{P}X - \frac{P_M}{P}M \qquad (4)$$

where

$$X \equiv Q_X - (C_X^P + I_X^P + C_X^G + I_X^G) \qquad (5a)$$

and

$$M \equiv C_M^P + I_M^P + C_M^G + I_M^G - Q_M \qquad (5b)$$

Also, ignoring imported raw materials and imported intermediate inputs

$$Q \equiv (P_X Q_X + P_M Q_M + P_N Q_N) P^{-1} \qquad (6)$$

For simplicity, we approximate the GDP deflator, P, with a Cobb-Douglas weighted average of the prices of traded goods P_T and non-traded goods P_N, where α is the share of non-traded goods in GDP.

$$P = P_T^{1-\alpha} P_N^{\alpha} \qquad 0 < \alpha < 1 \qquad (7)$$

The traded goods GDP deflator is also approximated with a Cobb-Douglas weighted average of the prices of exports and imports where β is the share of importables production in the total production of traded goods

$$P_T = P_X^{1-\beta} P_M^{\beta} \qquad 0 < \beta < 1 \qquad (8)$$

From (1a,b) and (2a,b) we obtain the familiar absorption identities in (9a,b), that the current account surplus is the excess of national income over domestic absorption and that the trade balance surplus equals the excess of domestic income over domestic absorption.

$$Q + \frac{EA^*}{P} - i^* \frac{E}{P} (D^* - R^*) - (C^P + I^P + C^G + I^G) \equiv CA \qquad (9a)$$

$$Q - (C^P + I^P + C^G + I^G) \equiv TB \qquad (9b)$$

From (1a) and (9a) we see that an increase in the current account surplus requires an increase in the combined private and public sector financial surpluses or, equivalently, an increase in national income relative to domestic (private plus public) absorption. This underlines the likelihood of a ***fiscal dimension*** to a current account improvement: most models of private consumption behaviour suggest that, holding constant taste, technology and external parameters, public revenue increases and/or

spending cuts will in general be necessary and sufficient to increase the sum of the public sector financial surplus and private saving. The main exceptions are those models of private consumption behaviour that exhibit debt neutrality such as representative agent models or overlapping generations models with operative intergenerational gift and bequest motives. Such models are extremely unlikely to describe accurately private consumption behaviour in developing and semi-industrial countries. Ignoring them in what follows, and assuming that public revenue increases or spending cuts do not boost private capital formation, fiscal retrenchment will reduce national absorption relative to national income.

Equation (9a) underlines the desirability of achieving a current account improvement via an increase in income rather than through a reduction in absorption. Three channels are potentially available for this: (1) increased domestic output, (2) increased foreign aid and (3) a reduction in foreign interest obligations, either by reducing the interest rate on the external debt or by writing down the debt.

A boost to domestic output, Q, can be achieved either by taking up any slack due to deficient aggregate demand or by fiscal or other measures aimed at boosting aggregate supply. Since output and absorption need not be behaviourally independent of each other, it is essential to adopt a general equilibrium approach when evaluating alternative policies to improve the current account. E.g, successful supply-side measures, by raising both current and permanent income, can be expected to stimulate private consumption. They may also induce a positive response of domestic private investment. The net effect on the current account need not be positive, absent further measures to restrain absorption.

Fiscal measures to stimulate output under conditions of Keynesian excess capacity will involve expansionary actions such as tax cuts, public

spending increases or expansionary monetary or credit policy measures that (subject to well known qualifications concerning the exchange rate regime and the degree of international capital mobility) are likely to worsen the current account.

Increased foreign aid will only improve the current account, given output, if some fraction of the aid inflow is not spent. If the increased aid relaxes a foreign exchange bottleneck and if the additional external resources are dedicated to the importation of essential foreign productive inputs, it can boost supply. To the extent that the increased volume of production does not generate a matching increase in private or public spending, this will improve the current account.

Exactly the same holds as regards the current account consequences of a reduction in external interest payments. The one-for-one improvement in the current account caused by interest rate or debt relief at given levels of output and absorption, will be augmented by any positive supply response in countries where production is foreign-exchange-contrained. It will be correspondingly diminished by any positive effect of debt relief on public or private spending.

Equation (9a) also emphasises that, even if a reduction in absorption is the current-account-improving policy of choice, there are still a number of ways of skinning that cat, each of which will have different short-run and long-run supply consequences and distributional implications. Absorption cuts can be aimed at public spending or at private spending and, within each of these categories, at consumption or at investment. Private spending can be cut by raising taxes or tariffs, by cutting subsidies or by raising the cost and/or availability of credit to the private sector. Taxing imported luxury consumer durables will have very different distributional implications from cutting subsidies on the staple foods

consumed mainly by the poor. The distributional consequences of changes in exhaustive public spending (education, health etc) may be as important as those of variations in transfer payments or taxes. They should be considered together with the allocative consequences and, in demand-constrained sectors of the economy, the Keynesian, cyclical output effects.

These distributional effects of absorption-reducing policy measures can be reinforced or offset by changes in the distribution of factor incomes (wages of different types of labour, rental incomes from the ownership of different types of land; profits accruing to the owners of different types of capital and rentier incomes). This is considered briefly below in Section 3.

The fiscal dimension of a current account improvement can only be understood properly by recognising that policies to influence the current account are *ipso facto* concerned with the nation's *intertemporal allocation of resources*. Intertemporal relative (shadow) prices such as the real interest rate, the rates of return on other assets and, in repressed financial systems with widespread credit rationing, both the cost and availability of credit will play a central role in the transmission mechanism between fiscal policy actions and current account outcomes. When e.g. the domestic financial markets are not perfectly integrated into with the global financial markets, bond-financed fiscal tightening will tend to result in lower domestic real interest rates or less severe credit rationing. Even when domestic asset returns are fixed by the rest of the world, the nation's solvency constraint and that of the public sector (discussed in Sections 4 and 5) imply that fiscal tightening today implies fiscal relaxation (relative to what otherwise would have been the case) in the future.

Equations (4) and (5a.b) bring out the *static relative price* and *resource reallocation* dimensions of a current account improvement. In the short run, given the foreign interest rate, the net stock of external debt and the aid flow, a current account improvement is the same thing as a trade balance improvement.[8] A trade balance improvement requires an increase in the production of tradeables and/or a reduction in the absorption of tradeables. This will in general require changes in the real exchange rate (the relative price of traded and non-traded goods) and, if the country in question has some international market power, in the terms of trade (the relative price of exports and imports).

Fiscal tightening (an increase in taxes or a cut in public sector absorption) will almost certainly reduce the demand for non-traded goods at the initial real exchange rate. Income tax or indirect tax increases will reduce private consumption, part of which will fall on non-traded goods. Higher taxes on profits and tighter private sector credit rationing will discourage private investment which often has a significant non-traded goods component. Public spending cuts are also likely to fall to a significant extent on non-traded goods. In a well-functioning economy with a flexible relative price of traded to non-traded goods and resource mobility between the traded and non-traded goods sectors, a fiscal contraction will reduce the relative price of non-traded goods and cause a movement of resources into the traded goods sector. This eliminates the incipient excess supply of non-traded goods at the old real exchange rate.

The non-traded goods market equilibrium condition, given in equation (10) permits one to summarise the proximate determinants of the real exchange rate in a convenient manner.

$$Q_N = C_N^P + I_N^P + C_N^G + I_N^G \qquad (10)$$

Given the economy-wide resource endowments and the degree of intersectoral resource mobility, Q_N is a decreasing function of the real exchange rate $\pi \equiv P_T/P_N$ and Q_T an increasing function (see e.g. Dornbusch [1980]). The concave production possibility frontier is the curve AB in Figure 1.

Given aggregate real private consumption, private consumption of non-traded goods is an increasing function of the real exchange rate. In the Cobb-Douglas (constant expenditure shares) case this yields:

$$C_N^P = \tilde{\alpha}\pi^{(1-\tilde{\alpha})}C^P \qquad 0 < \tilde{\alpha} < 1 \qquad (11)$$

The share of non-traded consumption in total consumption is denoted $\tilde{\alpha}$.[9]

A current tax increase reduces aggregate consumption (barring debt neutrality). In Figure 1, this causes a movement of production from a point such as Ω_1 to a point such as Ω_2.[10] Absorption would move from a point such as $\tilde{\Omega}_1$ (with a trade balance deficit measured by the vertical distance $\tilde{\Omega}_1 - \Omega_1$) to a point such as $\tilde{\Omega}_2$ (with a trade balance surplus measured by the vertical distance $\Omega_2 - \tilde{\Omega}_1$). The relative price of non-traded goods (measured by the absolute values of the tangents to the production possibility frontier (T_1T_1 and T_2T_2) and the indifference curves ($\bar{r}_1\bar{r}_1$ and $\bar{r}_2\bar{r}_2$)) falls, i.e. π rises. The same qualitative effects follow from a cut in public spending on non-traded goods; even if this were tax-financed, the marginal private spending share on non-traded goods is less than 100 per cent.

Restrictions on factor mobility, but still unrestricted flexibility of factor prices and relative goods prices, would result in a production

possibility frontier such as A'B' that lies everywhere inside the "full mobility frontier" AB, except at the initial "status quo" position Ω_1.

Rigid relative prices or the emergence of Keynesian demand-constrained equilibria would show up as movements inside the production possibility frontier in response to a contraction of aggregate demand. E.g. in the small country case where traded goods output is never demand-constrained, one could get a production equilibrium at Ω_3 instead of at Ω_2 after a fiscal contraction: excess capacity and unemployment emerge in the non-traded good sector. Where the country has some market power in the markets for its tradeables, demand-deficient excess capacity and unemployment can emerge also in the traded goods sector following a fiscal contraction.

An issue requiring both more empirical and more analytical research concerns those characteristics of countries that render them more likely to experience "Keynesian" or demand-constrained excess capacity and unemployment when subjected to policies aimed at reducing absorption. The existence of a large modern or "formal" non-traded goods sector with production for the market rather than for subsistence or, in the traded goods sector, a downward-sloping, rather inelastic world demand schedule for exportables, seem necessary for the emergence of demand-constrained equilibria. So is the existence of nominal inertia or stickiness of money wages or output prices. The larger and more developed Southern Cone countries, and countries such as Korea and Taiwan therefore seem more likely to undergo episodes of Keynesian excess capacity when fiscal and/or monetary policy are tightened than the poorer and smaller developing countries with less extensive formal sectors. Even in the Latin American and East Asian NIC's, wage and price flexibility could reduce the likelihood and severity of demand-deficient recessions. Little is known of

the peculiarities of wage and price determination in developing countries, and of the extent to which the industrial country parables based on nominal or real wage rigidities need to be adapted to fit the institutions and experiences of about 100 very heterogeneous developing and new industrial countries.

Within the traded goods sector, changes in the composition of production and demand are likely in response to a fiscal contraction (see e.g. Buiter [1988b] for a recent theoretical analysis using an intertemporal model). Figure 2A shows an initial production equilibrium for importables and exportables at Ω_1 on the QQ locus. Domestic demand for exportables and import-competing good is at $\tilde{\Omega}_1$, with a trade balance deficit (measured in imports) of $B\tilde{\Omega}_1$. The fiscal contraction moves resources out of the non-traded goods sector into the traded goods sector. The production possibility frontier for exportables and importables moves to Q'Q'. In the small country case considered in Figure 2A, the terms of trade are unchanged. If the resources released by the non-traded goods sector don't favour either the exporting or import-competing sector, the new production point will be one like Ω_2 in Figure 2A: both export production and import-competing production will increase.

The fiscal contraction which started off the whole process will reduce the demand for imports as well as for exportable goods (barring very different income effects on the demand for exportables and imports). The new domestic demand point is at $\tilde{\Omega}_2$ with a trade balance surplus (measured in imports) of $\tilde{\Omega}_2 B'$.

A country facing a downward-sloping export demand schedule would experience a worsening in its terms of trade as resources moved into the tradeables sector. Compared with the constant terms of trade case, the increase in the production of tradeables would favour import-competing

goods rather than the production of exportables. In Figure 2B the production point would move from Ω_1 to a point such as Ω_2 rather than Ω_2' which would have been chosen at constant terms of trade.[11] Domestic demand (not shown in Figure 2B) would be moved towards exportables and away from import-competing goods, compared to what would happen at constant terms of trade.

3. Breakdowns in the internal and external transfer processes

What can go wrong in the external-internal transfer process? First, it may be economically or politically impossible to effect the internal fiscal transfer. This means either that the government's fiscal instrumentarium is insufficient or that it is unwilling or unable to use it in the manner and to the extent required.

On the public expenditure side, there is little point in a government committing itself to a programme of spending cuts if any attempt to implement such cuts leads to the fall of the government and its replacement by a government unwilling to contemplate serious cuts. E.g. severe cuts in spending on the military raise the danger of a military coup. Cuts in food subsidies, in public sector civilian pay or employment or in Treasury subsidies to loss-making state enterprises, can lead to unrest, especially among the urbanised, unionised and better educated sections of society capable of undermining or toppling governments. Debtor country governments often play the "political constraints on public spending cuts" card quite skillfully in their negotiations with multilateral lending agencies, and foreign private and official creditors. While these constraints may be real, they are not independent of the past, present and anticipated future actions of the governments in question and the scope for strategic behaviour is considerable.

Raising current revenues is difficult in most developing countries, given their narrow tax base. For decades, widening the tax-base (through a more broadly-based income tax; through more effective enforcement of existing income tax rules; through a broadly-based sales tax; through expenditure taxes etc) has been a standard recommendation from anyone considering options for fiscal reform in developing countries, but relatively little has happened thus far. The recommendation is nevertheless repeated here.

Figures 3, 4 and 5 and Table 1 show how the overall tax burden and its composition differs across developing countries and between developing and industrial countries. The greater role of direct taxes on labour income (including social security taxes) in the industrial countries stands out as does the quite important role of taxes on international trade in the developing countries, especially the poorest ones and the more open ones.

Capital flight is another factor contributing to a narrow revenue base. While capital flight occurs partly in response to macroeconomic mismanagement (such as the maintenance of an overvalued exchange rate) part of it is likely to be motivated by a desire to evade taxes. The industrial countries that are the recipients of much of this flight capital could strengthen the fiscal position of many developing countries by reporting foreign investment income to the fiscal authorities of the developing countries or even by acting as their agents in collecting taxes that are due.

Through asset sales, including privatisation of publicly-owned industries, the government can achieve an apparent once-off improvement of its revenue. If these assets yielded a positive net cash flow to the government, the short-run improvement of its financial position will be reversed in the longer run. The asset sale is a financing item and like

public sector borrowing, belongs "below the line". There may of course be excellent reasons for wishing to privatise, including hoped-for positive incentive effects leading to efficiency and productivity gains in the privatised industries. Revenue considerations should, however, not play a role except to the extent that the government can sell the assets to the private sector at a price in excess of the present discounted value of future net cash flows under continued public ownership.

Even if the internal fiscal transfer is effected, the external transfer may not materialise because there is full financial crowding-out (or "crowding-in") or because resources do not flow into the right direction and relative prices do not adjust.

The financial crowding-out mechanism is likely to be quite different in a financially repressed, credit-rationed developing country from what it is in industrial country where interest rates and financial asset prices approximate the market-clearing paradigm more closely. With private spending constrained by the availability of rationed credit, the effect on the current account of an increase in taxes would, with a marginal propensity to spend of unity, not be offset (even in part) by a reduction in private saving. "Debt neutrality", the independence of private consumption and investment of the government's mix of borrowing and tax financing[12] would a-priori seem extremely unlikely in credit-rationed developing countries. The preliminary findings of Haque [1986] and of Haque and Montiel [1987] which do not reject the null-hypothesis of debt neutrality for a number of developing countries, are therefore very surprising. With debt neutrality, government deficit reductions brought about through tax increases would lead to an equal reduction in private saving, leaving the current account unchanged. Permanent cuts in "exhaustive" public spending also would merely result in an equal increase

in private consumption and no effect on the trade balance. It seems extremely unlikely that developing countries (or indeed industrial countries) exhibit debt neutrality, but more robust empirical evidence on the nature and degree of "financial crowding-out" on the demand side would be most useful.

Economists of the structuralist school for a long time have emphasised the possibility of "supply-side" financial crowding-out and this possibility has also been recognised more recently in "mainstream" macroeconomies (see e.g. Blinder [1987]). The simplest version of this involves an "Austrian" production model with lags between the application of inputs and the emergence of saleable output. Such lags create a need for working capital to finance the process of production; the cost and availability of this working capital can affect (or even constrain) supply. Reductions in public sector borrowing permitted by lower public sector deficits brought about through spending cuts can therefore boost supply even in the short run. The effect of this supply-side stimulus on the current account will depend on the extent to which it induces an increase in private absorption. (What's good news for the economy need not be good news for the current account).

The resource reallocation from the non-traded goods sector into the traded goods sector may not take place to the required extent, or at all. Where intersectoral resource immobility reflects real economic rigidities (skill mismatch, spatially separated labour markets etc) without serious externalities there is no prima-facie cause for policy intervention on efficiency grounds. Where inefficient laws, rules and regulations in labour markets, housing markets and credit markets unnecessarily restrict the mobility of labour and other resources, the usual "first-best" policy prescriptions apply: eliminate the sources of the inefficiency.

The implications of fiscal adjustment for factor prices and the distribution of "primary" incomes) depends both on the degree of intersectoral factor mobility and on the factor intensities of production in the different sectors. Owners of factors "specific to" the contracting sectors (typically the non-traded good sector in the case of a fiscal contraction) will suffer a loss of rents to these fixed factors. Even where and when factors are mobile and priced competitively, the owners of factors used relatively intensively in the contracting sectors will suffer a fall in real income. If these potential losers are well organised or easily mobilised and if they cannot be bought off with an acceptable compensation scheme, they may be able to block the policy changes and prevent the necessary adjustment.

Even if compensation of losers is feasible, it is likely to be distortionary and the efficiency losses involved in the side-payments mechanisms should be taken into account in a comprehensive cost-benefit analysis.

Rent-seeking behaviour may become especially intense when the status-quo is threatened; the real resource cost of DUPE activities will have to be added to the cost of failing to implement the fiscal program, if the activities are successful.

Often (but not always) the signal that both indicates the need for resource movements and motivates them, is a change in relative prices. The adjustment process following a fiscal contraction can be frustrated by the failure to achieve a sufficiently large depreciation of the real exchange rate, i.e. a decline in the relative price of non-traded goods. This is not too surprising once one realises that a depreciation of the real exchange rate tends to be associated with a reduction in real consumption wages.[13]

Rigid real wages in excess of market clearing values are often maintained in the formal sector through a combination of union pressure, public sector employment and pay rules and a high degree of index-linking of money wages to the cost of living. Achieving a real depreciation in such a setting means rather more than implementing a nominal "maxi-devaluation" and validating this through appropriate supporting fiscal policies (see e.g. Khan and Lizondo [1987] and van Wijnbergen [1986]). It means achieving a change in the balance of power in the labour market by weakening organised labour and strengthening employers, private and public, through legislation and other measures. Having altered the fundamental determinants of industrial bargaining (and lobbying) power (a process likely to involve significant political and social conflict), a nominal maxi-devaluation may of course well be helpful in achieving any target real devaluation at least cost. For a nominal devaluation to be superior to a nominal wage and price reduction, some form of nominal inertia in wage or price determination must be present, or the asset revaluations associated with nominal maxi-devaluations must be less disruptive (or contractionary) than those associated with reductions in domestic nominal costs and prices. The rigidities stressed in most discussions of developing countries' labour markets are, however, real, not nominal rigidities. Nominal inertia (both in the level and rate of change of money wages and prices) may however result from lags in the indexation process, staggered, overlapping wage contracts and slow adjustment in inflationary expectations. Possible short-run contractionary effects of maxi-devaluations have been stressed by many experts (see e.g. Diaz-Alejandro [1965], Krugman and Taylor [1978], van Wijnbergen [1986], Edwards [1986]). Even as a facilitating instrument in a real exchange rate

adjustment that is warranted by the fundamentals, nominal maxi-devaluations don't appear to be an automatic policy choice.

Note that "once-off" maxi-devaluations are quite distinct from choosing a higher rate of crawl in a crawling peg exchange rate regime. If the government's fiscal and financial policy choices imply a permanently higher rate of monetary growth and (eventually) a permanently higher rate of inflation, a higher rate of depreciation of the nominal exchange rate is implied, eventually. Different rates of (anticipated) inflation imply different amounts of "seigniorage" or (anticipated) inflation tax extraction. The fiscal aspects of the inflation tax are considered in Section 6 below.

Incomes policy, i.e. direct wage (and possibly price) controls too will not be helpful in achieving a lasting real depreciation unless it changes the underlying balance of power in the labour market. It may, of course, still be helpful in facilitating the transition from a high rate of inflation (or even a hyper-inflation) to a lower rate of inflation a least cost in terms of output and employment foregone, by breaking the vicious "after-you" equilibrium of oligopolistic wage and price determination and, perhaps, by adding to the credibility of the accompanying fiscal-monetary-exchange rate policy package. Both incomes policy and nominal exchange rate policy can be used to "signal" government intentions and to "break" a non-cooperative wage and price setting equilibrium by acting as a co-ordinating device for oligopolistic unions and firms.

Finally, even if the right fiscal correction is undertaken, *and* the private financial surplus does not decline one for one with the public sector financial deficit, *and* the real exchange rate depreciates *and* resources flow out of the non-traded into the traded goods sector, the resulting improvement in the trade balance may have the wrong composition

as regards increases in exports versus reductions in imports. Without detailed information on the productive technologies, economy-wide factor supplies, intersectoral factor mobility, global and domestic demands, it is impossible to determine whether the resources flowing into the traded goods sectors should be allocated to the production of exportables or of import-competing goods. The 1987 WDR suggested that, as an empirical matter, many developing countries had contravened their true international comparative advantage by favouring import competition over export promotion through overvalued exchange rates, tariffs, non-tariff barriers to trade, selective use of subsidies and credit rationing etc. Even where this is true, the magnitude of the corrective policy response that is required is by no means obvious. The identification and pursuit of comparative advantage in a highly distorted economy is very difficult, not only politically, but also as a narrowly technical or conceptual issue.

4. The solvency of a nation

In this Section the solvency of a national economy is studied not because solvency is necessarily (or even frequently) a binding constraint on external borrowing strategies, but because the "forward-looking" accounting framework involved in solvency assessments can be used to evaluate the internal consistency of any set of plans for external borrowing, debt service, exports, imports and other current external transactions.

Time-consistent external debt strategies, i.e. plans for external borrowing and repayment which are at each instant in the perceived self-interest of the sovereign borrowers and the creditors (absent "third party" enforcement of the laws of contract (including the laws of bankruptcy)), may well lie strictly in the interior of what would be the

feasible set in the presence of credible, binding commitments by debtors and creditors. Even such (socially sub-optimal) time-consistent plans must, however, be feasible or internally consistent. This Section and the next focus almost exclusively on the narrow issue that current and future plans should "add up". For the analysis of the positive and normative issues of sovereign borrowing, ability and willingness to pay see e.g. Eaton and Gersovitz [1981 (a,b), 1983], Eaton, Gersovitz and Stiglitz [1986] and Kletzer [1984].

Consider the current account identity in equation (1b). Let $F^* \equiv R^*-D^*$ be the nation's stock of net foreign assets, $f^* \equiv EF^*/PQ$ the stock of net foreign assets as a fraction of GDP, $tb \equiv TB/Q$ the trade balance surplus as a fraction of GDP and $a^* \equiv EA^*/PQ$ foreign aid and other current transfers from abroad as a proportion of GDP. Let n be the proportional growth rate of real GDP, π the domestic rate of GDP inflation, π^* the world rate of GDP inflation, ϵ the proportional rate of depreciation of the nominal exchange rate, γ the proportional rate of depreciation of the real exchange rate (defined here as the ratio of the foreign GDP deflator times the nominal exchange rate to the domestic GDP deflator) and r^* the foreign real interest rate.[14] It follows that

$$\gamma \equiv \epsilon + \pi^* - \pi$$

and

$$r^* \equiv i^* - \pi^*$$

Using these notational conventions, equation (1b) can be rewritten as:

$$\Delta f^* \equiv tb + a^* + (r^*+\gamma-n)f^* \qquad (12)$$

Note that a depreciating real exchange rate ($\gamma > 0$) raises the domestic real resource cost of any given foreign real interest rate. The "asset-revaluations-and-real-growth-corrected" current acount identity in (12) implies the intertemporal national budget constraint, present value national budget constraint or national solvency constraint given in (13). PV(s;tb+a*;r*+γ-n) denotes the present discounted value, at time s, of the entire planned or expected future stream of trade balance surpluses plus net foreign current transfers (as fractions of GDP) tb + a*, where the discount rate is the real-exchange-rate-depreciation-corrected foreign real interest rate (r*+γ) minus the growth rate of real GDP, n.

$$-f^*(s) \equiv PV(s;tb+a^*;r^*+\gamma-n) \qquad (13)$$

Equation (13) means that the present discounted value of future trade balance surpluses plus net inflows of foreign aid and remittances (as a proportion of GDP) is just equal to the nation's current net external debt (as a proportion of GDP).[15,16] The sum of the trade balance surplus and the net current transfers will be referred to henceforth as the nation's *primary surplus*.

The nation's primary surplus is occasionally called the nation's net resource transfer. In principle names don't matter, although poorly chosen names can sometimes confuse the unwary. The primary surplus is the excess of *domestic* income over national absorption. The current account surplus is the excess of ***national*** income over national absorption.

The primary surplus measures the nation's net resource transfer to the rest of the world when domestic income is taken as the "benchmark" or "origin" relative to which transfers are measured. The current account surplus measures the nation's net resource transfer to the rest of the world if national income is taken as the benchmark or origin. The first

transfer concept emphasises the *location* of resources and the income streams they yield within the nation's boundaries. The second concept focuses on the *ownership* of resources and the associated income streams by national residents, irrespective of the location of the resources.

An emphasis on the "territorial" definition over the "ownership" definition (or vice-versa) is sometimes adopted by those with strong views on the (il)legitimacy or priority of foreign ownership claims on national resources (directly or through the tax system). It is (fortunately) not necessary for what follows to get sidetracked any further into these semantic discussions.

Equation (13) follows from the asset-revaluations and real-growth-corrected current account identity (12) only if the following rather technical-sounding condition holds: The present discounted value of the nation's net external debt in the very distant (strictly speaking infinitely far) future is zero.[17] What this means is that, ultimately, the external debt/GDP ratio has to grow at a rate less than $r^* + \gamma - n$ or, equivalently, that ultimately, the real external debt has to grow at a rate less than $r^* + \gamma$, or again that, ultimately, the foreign currency value of the external debt should grow at a rate below i^*. Ultimately, therefore, the country will have to run primary surpluses in order to service (pay the interest on) its debt. Solvency does not require that the debt be repaid, only that it is not possible indefinitely to finance the interest bill through further borrowing: at some stage primary surpluses must be achieved and any further borrowing will not be sufficient to pay the entire existing interest bill. The nation cannot play a successful Ponzi game.

A debtor country (with $f^*<0$) facing a real interest rate on its debt in excess of the real growth rate need, in principle, never achieve any ***current account surpluses*** in order to pursue a strategy consistent with

solvency;[18] it must be capable of generating, at some point, primary surpluses. A rising debt-GDP ratio is not by itself evidence of imminent or ultimate insolvency; only a debt GDP ratio scheduled to rise indefinitely at a rate in excess of $r^* + \gamma - n$ would spell eventual default or repudiation.

Given the existing debt, the primary surpluses projected for the future and the projected future interest rates, expressions such as (13), [or (13') or (13") in footnote 16] can be used to assess the consistency of the external debt strategy. If, under current policy projections, equation (13) is violated (specifically if the left-hand side exceeds the right-hand-side) this doesn't mean that default is inevitable, only that the strategy under consideration won't work. What will "give" to achieve equality in (13) is what the debate during the current debt crisis is all about. The lenders would like to see larger trade balance surpluses by the borrowers (larger tb values in equation (13) and indeed current account surpluses to reduce the creditors' exposure in the debtor countries). The borrowers would like to see some combination of more aid (larger a*), lower interest rates (lower r*), better terms of trade (negative γ), higher growth (larger n) or a write-down or write-off of (part of) the debt (a smaller value of -f*).

Capital flight introduces an important further dimension to equations (12) and (13). Net foreign assets, F* consist of official foreign exchange reserves R* and, in many developing countries, of a large amount of private foreign claims or assets $-D^{*P}$ against which is set a large amount of public or publicly guaranteed debt, D^{*G}. The income from the private overseas asset holdings often either stays abroad or, if repatriated, manages to escape the domestic fiscal authorities. New private capital outflows similarly are often beyond the control of the domestic authorities. Much

of the debt crisis debate then effectively focuses on the left-hand-side of the rearranged balance of payments equation (14)

$$\Delta D^{*G} \equiv \Delta R^{*} - \left[\frac{PTB}{E} + A^{*}\right] + i^{*}(D^{*G}-R^{*}) + \{i^{*}D^{*P}-\Delta D^{*P}\} \qquad (14)$$

The lenders are concerned with the developing country's debts (D^{*G}), not with its unattachable assets. Income from these assets tends to stay abroad ($i^{*}D^{*P}$, which is negative, automatically "disappears" into $-\Delta D^{*P}$). Even the building up of reserves by the monetary authorities is often viewed with suspicion, as being "at the expense of" debt service or, worse, in anticipation of a post-repudiation cash-in-advance international trading regime for the country.

Other critics have pointed out causal links between ΔD^{*G} and ΔD^{*P}, with new foreign lending to the public sector of highly indebted developing countries disappearing virtually instantaneously as private capital flight, and at times returning to the lending banks by return of electronic mail.

In the limit, capital flight and the associated tax evasion mean that, effectively, the nation's private external assets cease to be part of its true economic base and certainly of its public sector revenue base, leaving only the public external liabilities. This threatens the solvency of potentially viable nations. That the problem is serious can be inferred from Table 2 which reproduces some estimates by Cumby and Levich [1987] of the extent of flight capital for a number of countries.

5. The solvency of the public sector

The discussion of "national solvency" in the previous section should not lead one to think of any country, developing or industrial, as being well characterised by a single representative, national agent, i.e. a

behaviourally consolidated private-cum-public sector with full command over all national resources. As the external transfer in most developing countries is mediated through the public sector, separate consideration of the financial accounts, solvency constraint, spending programme and revenue basis of the public sector is in order.[19]

Equation (15) gives the budget identity of the consolidated public sector, i.e. general government, central bank and state enterprises.

$$\frac{\Delta H}{P} + \frac{\Delta B}{P} + \frac{E}{P}(\Delta D^{*G} - \Delta R^{*}) \equiv C^{G} + I^{G} - \frac{EA^{*}}{P} - T - J + \frac{iB}{P} + i^{*}\frac{E}{P}(D^{*G} - R^{*}) \quad (15)$$

H is the nominal stock of high-powered money or reserve money, i.e. the monetary base. It consists of coin and currency held by the public and reserves held by the commercial banking system and bears a zero nominal interest rate. Gross public sector capital formation I^{G}, the public sector capital stock K^{G} and the depreciation rate of the public sector capital stock δ are related by

$$\Delta K^{G} \equiv I^{G} - \delta K^{G}.$$

$F^{*G} \equiv R^{*} - D^{*G}$ is the government's net stock of foreign assets. The government's gross return from the public sector capital stock, J, can be written as the product of the capital stock K^{G} and its gross rate of return η, i.e.

$$J \equiv \eta K^{G}.$$

We also define the following ratios to GDP:

$$h \equiv H/PQ;\ k^{G} \equiv K^{G}/Q;\ b \equiv \frac{B}{PQ};\ c^{G} \equiv \frac{C^{G}}{Q};\ i^{G} \equiv \frac{I^{G}}{Q};\ \tau \equiv \frac{T}{Q};\ f^{*G} \equiv \frac{EF^{*G}}{PQ};$$

$$d^{*G} \equiv \frac{ED^{*G}}{PQ} \text{ and } \rho^* \equiv \frac{ER^*}{PQ} .$$

The government budget identity (15) can then be rewritten as:

$$\Delta b - \Delta f^{*G} - \Delta k^G \equiv c^G - (a^{*}+\tau)$$

$$+ (r^{*}-n)(b-f^{*G}-k^G)$$

$$+ (r-r^{*})b - \gamma f^{*G} + (r^{*}-(\eta-\delta))k^G$$

$$- [\Delta h+(n+\pi)h]$$

Let D denote the net non-monetary liabilities of the government, and d their ratio to GDP, i.e

$$D \equiv \frac{B}{P} - \frac{EF^{*G}}{P} - K^G$$

and

$$d \equiv \frac{D}{Q} .$$

The budget identity can then be written more compactly as in (16)

$$\Delta d \equiv c^G - (a^{*}+\tau) + (r^{*}+\gamma-n)d + \ell - \sigma \qquad (16)$$

where

$$\ell \equiv (r-(r^{*}+\gamma))b + (r^{*}+\gamma-(\eta-\delta))k^G \qquad (17a)$$

and

$$\sigma \equiv \Delta h + (n+\pi)h \qquad (17b)$$

The increase in the public sector's net debt-GDP ratio can, from equation (16), be expressed as the sum of four components. The first is $c^G-(a^*+\tau)$, the basic public sector primary (non-interest) current (or consumption account) deficit as a proportion of GDP. The second, $(r^*+\gamma-n)d$, is the real interest payments on the debt corrected for the growth of real GDP, as a proportion of GDP. The real interest rate imputed to the debt is the world real interest rate $r^* \equiv i^* - \pi^*$ plus the proportional rate of depreciation of the real exchange rate γ. The third, ℓ consists of the additional interest losses (which may of course be negative) accruing on the various assets and liabilities due to the fact that the real rate of return on these assets and liabilities differs from the world real interest rate corrected for real exchange rate changes. If domestic debt pays a real interest rate in terms of home goods (r) in excess of the world real interest rate corrected for real exchange rate depreciation $(r^*+\gamma)$ then ℓ increases by an amount $(r-(r^*+\gamma))b$. If the foreign real interest rate corrected for real exchange rate depreciation exceeds the net real rate of return on public sector capital, $\eta - \delta$, ℓ increases by an amount $(r^*+\gamma-(\eta-\delta))k^G$. Finally, the increase in the debt-GDP ratio will be smaller, the larger σ, real *seigniorage* or the real value of the increase in the nominal high-powered money stock (as a proportion of GDP).

From (16) and (17a, 17b) a few obvious facts stand out.

Substituting domestic debt for foreign debt.

The substitution of domestic debt, b, for foreign debt $(-f^{*G})$, will worsen the budgetary position of the government if the domestic real interest rate exceeds the foreign real interest rate corrected for real exchange rate depreciation. Both Turkey and Brazil have in recent years

pursued such a strategy, which may not have been very sensible (see Anand and van Wijnbergen [1987]).

If the substitution of domestic government debt for foreign public debt takes the form of a "stock-shift" open-market swap, the nation's total net foreign indebtedness at that instant will not of course have been affected. Private external indebtedness must have increased by the same amount as the reduction in foreign indebtedness. The government's balance sheet will have been weakened while that of the private sector has become stronger. This creates a problem if and to the extent that the government has trouble effecting the increased internal fiscal transfer required to service its costlier debt.

If the substitution of more expensive domestic public debt for foreign public debt takes the form of the government financing a larger share of its flow deficit by borrowing domestically, there will be, as time passes, first-order effects on the evolution of the nation's net external indebtedness, (1) through the higher future public sector deficits that would result because $r > r^* + \gamma$ (even if seigniorage, the primary deficit and the rest of z are unchanged); and (2) through any effects of the change in the internal-external financing mix on private saving and investment. If the private sector cannot borrow abroad (or cannot increase its borrowing abroad), the increased government borrowing in the domestic capital markets will crowd out private investment, either by pushing up domestic real interest rates or by tighter credit rationing. The response of private saving is less clear-cut, but under the conditions just stated, the private sector financial surplus will have to increase by the full amount of the switch of government borrowing from the external to the internal financial markets. When private access to the international financial markets is limited but non-zero, the short-run response of the

current account is still likely to be an improvement, although it again is likely to have been purchased at a cost in terms of domestic investment. Over time, the government would also encounter the more acute internal fiscal transfer problems discussed before.

The debt burden and the real exchange rate.

As was discussed in connection with national solvency in Section 4, a depreciating real exchange rate ($\gamma > 0$) increases the real domestic resource cost of servicing foreign debt (at any given world real interest rate r*). This confronts debtor countries with the unpleasant dilemma that they must achieve an improved level of competitiveness in order to generate the trade surpluses to required service their debt, while the very process of improving their competitiveness increases the real burden of that debt.

The return on the public sector capital stock.

The implications of different rates of return on the public sector capital stock[20] can be brought out most easily by considering two extremes. The first, optimistic, scenario has the net rate of return, $\eta - \delta$, equal to the opportunity cost of government borrowing, $r^* + \gamma$. If in addition $r = r^* - \gamma$, the primary deficit driving the debt dynamics in this case is simply the current or consumption account deficit, $c^G - (a^*+\tau)$.

The second, pessimistic (or realistic?), scenario has the gross rate of return η equal to zero. Capital effectively ceases to be an asset and gross investment ($i^G \equiv \Delta k^G+(\delta+n)k^G$) is like public consumption expenditure. Let net public debt excluding capital as a proportion of GDP be $\tilde{d} \equiv (B-EF^{G*})/PQ$. If in addition we have $r = r^* + \gamma$, the budget identity becomes

$$\Delta\tilde{d} \equiv c^G + i^G - (a^*+\tau) + (r^*+\gamma-n)\tilde{d} - \sigma. \qquad (18)$$

The primary deficit driving the debt dynamics now includes gross public sector capital formation. With $\eta < 0$, the true primary deficit, $c^G - (a^*+\tau) + \ell$ would be even larger.

The solvency constraint of the public sector

From equation (16) we can obtain the intertemporal budget constraint, present value budget constraint or solvency constraint of the public sector in the same way as was done for the nation as a whole in Section 4. It is given in equation (19)

$$d(s) = PV(s;\tau+a^*-\ell-c^G;r^*+\gamma-n) + PV(s;\sigma;r^*+\gamma-n) \qquad (19)$$

The present discounted value of future primary government surpluses (including ℓ, the drain on public sector revenues caused by costly domestic debt and low-yielding public sector capital) plus the present value of future resources appropriated by printing money should be equal to the outstanding net public debt.[21]

As in Section 4, the solvency constraint (19) should be viewed as an ex-ante consistency check on the government's spending, revenue raising and monetisation plans, given its initial outstanding debt.

When spending and revenue projections are made and evaluated, it is important to be aware of the spending and revenue implications of various structural adjustment policies.

Trade liberalisation, when it takes the form of reducing tariffs or export taxes and when the revenue base is less than unit elastic with respect to tax and tariff rates, will reduce revenues and weaken solvency unless future primary deficits are reduced or future seigniorage revenues are boosted. If neither occurs, the debt will not be serviced in full and we'll see either explicit (partial) repudiation or capital levies etc. This is not necessarily a bad thing, although it is likely to affect

adversely the government's future ability to borrow. The case for a more explicitly contingent public debt (internal and external) has been made forcefully among others by R. Dornbusch [1986 pp.131-150 and pp.175-176]. Provided the contingencies are clearly defined and observable and not under the control of the borrowing government, the case for making debt holders share (with labour and the owners of capital) in the burden of adjusting to internal and external exogenous shocks would seem to be a strong one.

Replacing quotas and import licenses (which typically are not auctioned off competitively) by uniform tariffs, as is currently being recommended by the World Bank, will raise government revenue in addition to having allocative or efficiency effects and may reduce the returns to rent-seeking activity.

The consequences of internal and external financial liberalisation for the government's ability to extract seigniorage will be considered in Section 6.

6. Seigniorage as a tax

Seigniorage, σ, the increase in the nominal high-powered money stock (as a proportion of GDP) can be written in a number of ways as shown in equation (20). $\mu \equiv \Delta H/H$ is the proportional rate of growth of the nominal high-powered money stock and $V \equiv PQ/H$ is the income velocity of circulation of high-powered money.

$$\sigma \equiv \frac{\Delta H}{PQ} \qquad (20)$$

$$\equiv \Delta h + (n+\pi)h$$

$$\equiv \mu V^{-1} \equiv \mu h$$

As can be seen from the second line of (20), total seigniorage can be broken down into 2 components, the reduction in the high-powered money - GDP ratio that would occur as a result of nominal GDP growth, holding constant the nominal stock of high-powered money ($(n+\pi)h$) and the change in the high-powered money-GDP ratio ($\Delta h \equiv -\Delta V/V^2$). If money demand equals money supply, $(n+\pi)h$ can be interpreted as the growth in nominal money demand due to inflation and real GDP growth at a given velocity. Δh is the increase in real money demand due to declining velocity. The two components will often move in opposite directions. Higher *actual* inflation will *cet.par.* increase $(n+\pi)h$. Directly and via higher nominal interest rates, higher *expected* inflation will also tend to increase velocity (reduce money demand at any given level of income). The third line of (20) provides a decomposition of seigniorage (or the inflation tax) into an ***inflation tax rate***, $\mu \equiv \Delta H/H$ and an ***inflation tax base***, $h \equiv V^{-1}$. A higher inflation tax rate will, given the tax base, raise seigniorage revenue. To the extent that a higher value of μ raises the expected rate of inflation (and for increases in μ that are perceived as permanent, it will do so sooner or later), it will also raise velocity and reduce the tax base. Only if the elasticity of velocity with respect to μ is less than unity, will seigniorage revenue go up as μ increases.

Consider the monetary base demand function given in equation (21)

$$h = f(i,Q;\varphi) \qquad f_i < 0 \qquad (21)$$

φ is a set of variables such as expected inflation, expected nominal exchange rate depreciation, foreign interest rates, official bank reserve requirements, capital controls etc. that may influence the demand for base money in addition to i and Q.

f_Q will be positive (negative) if the elasticity of real money base demand with respect to real income is greater than (less than) unity. For the moment, assume a unitary income elasticity and a real interest rate that is independent of the rate of inflation. In the long run, $\pi = \mu - n$. For a number of commonly used money demand functions such as the linear one in (22a) and the log-linear one in (22b) the long-run relationship between monetary growth and real seigniorage has the "Laffer curve" shape shown in Figure 6.[22]

$$h = a - bi \qquad a,b, > 0; \quad i < ab^{-1} \qquad (22a)$$

$$\ln h = a' - b' i \qquad b' > 0 \qquad (22b)$$

For the linear demand function, shown in Figures 6A, 6B, and for the log-linear demand function, shown in Figures 6C, 6D, there is a unique, finite, long-run seigniorage maximising rate of inflation (a/2b in the linear case, 1/b' in the log-linear case). No rational policy-making process would drive the long-run inflation rate beyond this point as in addition to the costs of higher inflation, there would be a reduction in inflation tax revenues. Many past and recent hyper-inflationary or near-hyper-inflationary episodes nevertheless saw the rate of inflation pushed well beyond the point of negative seigniorage returns. The political economy of such monetary irrationality is not very well understood.

The importance of seigniorage as a source of government revenue varies widely across countries at a point in time and over time for any given country. Only the cross-sectional variation is shown in Table 3. Note that all these data understate seigniorage revenue, as they only refer to currency outside banks. Currency held by the banks as "till money" and

reserves held either as cash or in the form of bankers' balances with the Central Bank are omitted because the data tend to be very unreliable.

The seigniorage tax base can be affected powerfully by direct international currency substitution ("dollarisation") and by domestic financial developments and reforms. Domestic financial deregulation and the development of deposit-taking institutions paying attractive interest rates will shrink the demand for currency held outside the banking system (Cur). With a given reserve requirement (θ) against deposits (Dep) (assumed binding), the reserve component of the monetary base (Res) will grow when bank deposits grow, as

$$Res = \theta Dep.$$

Since $H \equiv Cur + Res$, even the *sign* of the net effect of domestic financial deregulation and the growth of bank deposits on the seigniorage tax base is an empirical matter. Flight out of domestic currency and out of domestic bank deposits into foreign currency and/or foreign bank deposits in response to international interest differentials and/or expectations of exchange rate depreciation will unambiguously shrink the seigniorage tax base. More quantitative information on the demand for high-powered money as a function of expected inflation, domestic and foreign interest rates, expected exchange rate depreciation, the development and degree of sophistication of the banking system and the tightness and effectiveness of exchange controls would be very helpful.

In an economy in which all sources of government revenue are distortionary, optimal policy will minimise the unavoidable dead-weight losses involved in raising a given total revenue by using all available revenue instruments, including the inflation tax. More reliable knowledge

concerning the effect of changes in the inflation tax rate on the inflation tax yield is required if this instrument is to be used properly.

Seigniorage as defined here can be viewed as the *expected* inflation tax. If the government has a significant amount of long-dated nominally denominated (non-index-linked) debt outstanding, it can in addition use unanticipated inflation as a capital levy on the holders of this debt. Since the external debt is denominated in foreign currency and much of the domestic debt is effectively index-linked, this may not be as important a source of revenue as it could be in many of the industrial countries. In addition, this policy suffers from the defect that repeated use will lead to inflation risk premiums being built into the nominal yields on newly issued nominal debt.

Finally, inflation will affect the real yield of other taxes and revenue sources (specific duties, charges, tariffs etc.) and the real value of public spending because many spending programmes, tax schedules etc. are not index-linked and adjust to inflation only with a lag.

The biases do not always go in the same direction. Inflation will raise the real yield of a progresive income tax when the progressive rate schedule is not index-linked and adjusted to inflation only with a lag. Delays in the collection of taxes can, unless the right interest penalty for arrearages is imposed, reduce the real tax take significantly in an inflationary environment. Again our quantitative knowledge of the effect of inflation on real public spending and revenues is very incomplete, although Tanzi's [1978] work suggests that very high rates of inflation unambiguously and significantly reduce real public sector revenues.

What is clear is that the pursuit of reductions in the rate of inflation in the range where this reduces seigniorage may have serious fiscal consequences. If no matching reduction in the primary government

deficit is achieved, the growth of interest-bearing public debt (internal or external) will be increased. If taxes are raised or spending cut to prevent an increase in the growth of the public debt, the demand-depressing effect of the monetary tightening will be augmented by a contractionary fiscal impulse and a serious recession may result. While this may be judged to be a price worth paying for a reduction in the inflation rate, the choice should be made in full awareness of the entire range of likely consequences.

7. The consistency of inflation targets and financeable deficits

Recently the World Bank has developed a "short-hand consistency check" on certain aspects of a government's fiscal, financial and monetary strategy. This approach, based on the work of Anand and van Wijnbergen [1987], Knight [1986] and Coutinho [1986, 1988] within the Bank and closely related to some recent work of mine (Buiter [1983a,b] [1985], [1987a,b]) can be interpreted readily using the accounting framework of Sections 6 and 7.

Let z denote the real-growth-corrected operational deficit as a proportion of GDP, i.e. the sum of the primary deficit and the asset-revaluations-and-real- growth-corrected interest paid on the debt, as a proportion of GDP:

$$z \equiv c^G + i^G - (a^*+\tau) + \ell + (r^*+\gamma-n)(b+d^{*G}-\rho^*) \qquad (23)$$

The public sector budget identity given e.g. in equation (18) can be rewritten as

$$\sigma \equiv z - (\Delta b+\Delta d^{*G}-\Delta\rho^*) \qquad (24)$$

This identity can be used in a number of ways. One is to treat monetary financing, σ, as the residual.

To implement this, projections are provided for z, i.e. for the primary deficit and the interest payments on the outstanding stocks of internal and external public debt. This requires projections of *real* interest rates, i.e. of domestic and foreign nominal interest rates, of domestic and foreign inflation rates and of changes in the real (or nominal) exchange rate. The "financeable deficit" is then calculated, basically the desired (or permitted) changes in domestic indebtedness, Δb, external indebtedness, Δd^{*G}, minus any desired increase in external foreign exchange reserves, $\Delta \rho^{*}$. This uniquely determines σ, the value of the real resources (as a percentage of GDP) that the government will have to appropriate by running the printing presses.

With the required amount of seigniorage from equation (24), plus a set of equations relating base money to inflation, (typically centred around a high-powered money demand function) the inflation rate implied by the fiscal-financial programme on the right-hand-side of equation (24) can be determined. A popular candidate used in World Bank analyses is the long-linear base money demand function (in the example considered here, the income elasticity of money demand is constrained to equal unity). The inflation rate is the only other argument in this function. $\hat{h}$ in equation (25) denotes the desired or long-run demand for base money as a fraction of GDP.

$$\hat{h} = e^{(\alpha' - \beta' \pi)} \qquad \beta' > 0 \qquad (25)$$

The actual inflation rate π is assumed to exceed (fall short of) the expected, inertial or 'core' inflation rate $\hat{\pi}$ whenever h exceeds $\hat{h}$. This

relationship can be perturbed by additive exogenous shocks x.

$$\pi = \epsilon(h-\hat{h}) + \hat{\pi} + x \qquad \epsilon>0 \qquad (26)$$

Finally, inertial inflation $\hat{\pi}$ is assumed to be a simple function of past inflation, say,

$$\hat{\pi} = \lambda\pi(-1) \qquad 0<\lambda\leq 1 \qquad (27)$$

Given σ from equation (24) and equations (25), (26) and (27), we can calculate the inflation rate consistent with the deficit scenario and the assumptions about the financeable deficit. This implied or consistent rate of inflation can then be compared with the target rate of inflation (and with the inflation assumptions that are implicit in the projections made to obtain the right-hand-side of equation (24).

The converse approach is to start with a target path for inflation and to derive the path it implies for seigniorage σ given equations (25), (26) and (27). Given the amounts that can be borrowed at home and abroad and given the target change in international reserves, this implies a path for the operational deficit. This can then be compared with the actual plan for the operational deficit.

Any inconsistencies (in practice most likely to take the form of an implied inflation rate in excess of the target rate or an implied deficit in excess of the target one) will have to be reconciled by some combination of revisions in inflation projections, cuts in the primary deficit, reductions in the internal or external interest burden, increased internal or external borrowing (including arrearages) or lower foreign exchange reserves.

Note that from the public sector solvency constraint given in equation (19), given the initial net debt and the projected path of future

(corrected) primary deficits and of future real interest rates and growth rates, the present discounted value of future seigniorage required to make these projections consistent with government solvency can be calculated. This PDV can of course be achieved with many different time paths for σ. The approach outlined in this section picks among these many feasible time paths for σ by specifying paths for $\Delta b + \Delta d^{*G} - \Delta \rho^{*}$ (i.e. for the financeable deficit).

I consider this approach (basically a simple "uses and sources of funds" accounting exercise for the consolidated public sector with minimal behavioural fill-in (just the base money demand function and the inflation equations)), to be potentially useful because it imposes the essential discipline of looking at the totality of plans for public sector outlays, receipts and financing. Such an integrated approach is the only one that makes sence. Granted this 'global' approval of the method, I have some worries about misleading inferences that might be drawn from its *prima-facie* low behavioural content. There also are, inevitably, serious problems with any actual empirical implementation.

Nothing from nothing

The approach carries with it the danger that a casual reader or careless user might infer that in order to engage in macroeconomic policy evaluation all one needs is a base money demand function and an inflation equation. (If prices were perfectly flexible, one could even dispense with the separate inflation equation). In fact, in order to do the exercise, a vast amount of (implicit) economic and econometric modelling is required to produce projections for the right-hand-side of equation (24). There we find a number of key *endogenous* variables whose determination requires (implicitly or explicitly) the kind of general equilibrium macroeconometric modelling that the consistency check appears to short-cut.

Among these key endogenous variables are the domestic real interest rate, the real exchange rate (through γ) and the growth rate and level of real economic activity. The latter enter through n and because real tax receipts and other current revenues and outlays are functions of (among other things) the levels of output and employment. The consistency check should in principle be extended to include these variables. When this is not done, the danger exists that changes in policy that are intended to eliminate an ex-ante inconsistency between inflation plans and budget deficit plans will only do so by enlarging the inconsistency between the inflation and deficit projections on the one hand and the real interest rate, real exchange rate and real economic activity assumptions on the other hand.

The base money demand function

Having estimated base money demand functions for the UK and USA for the post-World-War-II period, it is easy to become impressed (and depressed) with the instability of this relationship. Much of this can no doubt be explained (ex-post) as reflecting irregular spurts of financial innovation and development. In addition there are likely to be episodes of (dis)intermediation in response to changes in regulatory policy. In a new industrial country such as e.g. Brazil all these sources of instability are likely to be present in force, plus some others. Variations in the degree of stringency of capital controls are likely to be reflected in variations in the degree of (direct) international currency substitution. Changes in reserve requirements are also likely to shift a simple base money demand function such as the one given in equation (25).

The inflation function

Equations (26)* and (27) define a completely 'backward-looking' inflation and price process. There is no room for announcement effects,

credibility etc. to affect the rate of inflation other than through the shift dummy x. There is also no room in the equation (again except through x) for a role for *indexation arrangements*, direct or indirect effects of *exchange rate behaviour* or *cost pressures* (domestic or imported). While it is easy to criticise any piece of empirical work for errors of omission (and errors of commission), these specific criticisms are born not out of a scholarly thirst for purity, but out of worries resulting from the fact that these particular omitted factors are widely recognised as having played (and continuing to play) a major role in the economic processes governing contemporary Brazil, Argentina, Mexico, etc.

The seigniorage Laffer curve

As was pointed out in Section 6, many theoretically and empirically acceptable money demand function have the property that there is more than one rate of inflation that can generate any given amount of seigniorage. This is most easily seen if we consider stationary equilibria in which the (actual and expected) rate of inflation is constant over time. (Not all plausible money demand functions have this property; e.g. the hyperbolic function $h = a''/(b''+\pi)$ with $a'',b''>0$ has seigniorage independent of the rate of inflation; the constant velocity version $h = a$, $a>0$ has seigniorage increasing with inflation forever; other reasonable functions yield many local seigniorage peaks and troughs).

The long-linear function often used in the Bank's analyses has the unimodal long-run seigniorage Laffer curve depicted in Figure (6c,d). When the inflation rate is calculated that yields a given amount of seigniorage, the *lower* of the two rates is typically chosen in Bank analyses. While this may be good prescriptive economics (no rational policy-making process would drive the rate of inflation beyond the point at which it yields maximal revenue), it is likely to be bad positive economics. Every

hyperinflation in history clearly put the country experiencing it on the revenue-inefficient side of the seigniorage Laffer curve. The same is likely to have been true with the very high rate of inflation seen in a number of Southern Cone countries in recent years.

Inflation and the primary deficit

It is likely to be empirically important to allow for the effect of inflation on the primary deficit. As pointed out in Section 6, we know from the work of Tanzi [1978] and others that with very high rates of inflation, government real tax revenues will decline, quite often dramatically. If there are any elements of nominal progression in the income tax structure, this real revenue-raising effect will be swamped by the effect of collection lags and lags in the inflation adjustment of specific duties etc. Less is known about the effect of high (and variable) rates of inflation on government expenditures. Empirical studies must allow for feedback from the inflation rate to be first term on the right-hand-side of equation (24).

More lack of superneutrality

Different rates of inflation may affect the right-hand-side of equation (24) not only through the primary deficit but also through the real interest rate and the depreciation of the real exchange rate. I don't know how to evaluate the quantitative significance of this point.

Unclever budget cuts

It may be unnecessary to point out that even within the primary deficit total, the various spending and revenue components are not independent of each other, in the short run and in the long run. Spending cuts that depress activity also depress output-or-income-sensitive receipts. Even without extreme Lafferian responses, supply-side-friendly tax cuts or subsidies may recoup part of the initial budgetary cost. Cuts in

productive public sector capital formation may damage the supply side of the economy, conceivably to the point that the public deficit rises rather than falls (see Buiter [1987b]). While these problems are not specific to the approach under consideration, they are important when the policy response to an "inconsistency verdict" is being pondered.

8. Conclusion

This paper is a non-systematic perusal of some of the key issues in the design and conduct of fiscal policy for stabilisation and structural adjustment in developing countries. Its coverage undoubtedly is subject to both Type I and Type II errors. I nevertheless hope that its focus on the external and internal transfer problems, national solvency and public sector solvency (with a fairly extended discussion of the inflation tax and the consistency of fiscal, financial and monetary plans) does provide a useful starting point for further discussion.

Footnotes

* Many of the participants at a World Bank (W.D.R.) workshop on fiscal policy in the O.E.C.D. and in the developing countries (on October 30, 1987) made helpful comments on an earlier draft of this paper which was written as a background paper for the 1988 W.D.R. Among them were Guillermo Calvo, Vito Tanzi, Sweder van Wijnbergen, Alain Ize and Brian Pinto. Gus Ranis also made a number of helpful suggestions on an earlier draft. The World Bank does not accept responsibility for the views expressed herein which are those of the author and should not be attributed to the World Bank or to its affiliated organizations. The findings, interpretations, and conclusions are the results of research supported by the Bank, they do not necessarily represent official policy of the Bank. The designations employed, the presentation of material, and any maps used in this document are solely for the convenience of the reader and do not imply the expression of any opinion whatsoever on the part of the World Bank or its affiliates concerning the legal status of any country, territory, city, area, or of its authorities, or concerning the delimitation of its boundaries, or national affiliation.

1 These are Argentina, Bolivia, Brazil, Chile, Columbia, Cote D'Ivoire, Ecuador, Mexico, Morocco, Nigeria, Peru, Philippines, Uruguay, Venezuela and Yugoslavia. The World Bank's group of seventeen "Heavily-indebted countries" adds Costa Rica and Jamaica. Further major debtors are South Korea, Thailand and Turkey.

2 The World Bank's World Development Report identifies 24 countries as Low-Income Sub-Saharan Africa and 10 more as (lower) middle-income Sub-Saharan Africa.

3 A reduction in the private sector financial deficit will cet. par. also improve the current account deficit. Where this can be achieved through an increase in the savings rate, it will in general be welcome. In many of the poorer developing countries, the scope for this is rather limited. A reduction in the private sector financial deficit through a cut in private sector capital formation is unlikely to be desirable.

4 Again this ought to be called the *increase* in the (internal) fiscal transfer, but established usage and verbal hygiene conflict here too.

5 It is assumed for simplicity that the interest rate on foreign exchange reserves is the same as that on foreign debt.

6 For simplicity all net external current transfers are assumed to accrue to the government. This assumption is most inappropriate in the case of private remittances.

7 Q_X, Q_M and Q_N are domestic production of the exportable good, the importable good and the non-traded good respectively. C_j^k and I_j^k; $k = P,G$; $j = X,M,N$ are domestic demands for the three goods by the private, (P), and public (G) sectors respectively.

8 In the long run, a smaller stock of external debt obtained as the result of a period of cumulative current account surpluses permits a country to run a sustainable smaller trade balance surplus or a larger deficit.

9 Note that C^P is aggregate consumption spending measured in GDP units, i.e. $C^P \equiv [P_X C_X^P + P_M C_M^P + P_N C_N^P]P^{-1}$.

10 Private investment spending on non-traded goods is held constant in this thought experiment and the next one involving changes in public spending on non-traded goods.

11 The production of exportables need not fall absolutely, as in Figure 2A.

12 Given the volume and the composition of the government's "exhaustive" public spending programme on goods and services, and ignoring the distortionary effects of non-lump sum taxes.

13 If the money wage is W, the real consumption wage $\tilde{w}$ is defined by:

$$\tilde{w} \equiv \frac{W}{\tilde{P}}$$

$$\tilde{P} = \tilde{P}_T^{1-\tilde{\alpha}} P_N^{\tilde{\alpha}} \qquad 0 < \tilde{\alpha} < 1$$

$$\tilde{P}_T = P_X^{1-\tilde{\beta}} P_M^{\tilde{\beta}} \qquad 0 < \tilde{\beta} < 1$$

$\tilde{P}$ is the (Cobb-Douglas) consumer price index; $\tilde{P}_T$ is the consumer price index for traded goods. $\tilde{\beta}$ is the share of imports in traded goods spending and $\tilde{\alpha}$ the share of non-traded goods in total consumption spending. If the non-traded goods price is a markup on unit labour cost then $P_N = (1+\mu)WL_N/Q_N$ where μ is the proportional markup and L_N is labour employed in the non-traded goods sector. This implies

$$\tilde{w} = \frac{Q_N}{L_N(1+\mu)} \left[\frac{P_N}{\tilde{P}_T}\right]^{1-\tilde{\alpha}}$$

If there are no intersectoral differences in factor intensities (so Q_N/L_N is independent of Q_N), and if the markup is constant then a decline in the relative price of non-traded goods lowers the real consumption wage. This will be reinforced if the average product of labour in the non-traded goods sector declines as $P_N/\tilde{P}_T$ declines and Q_N contracts, which is likely to happen if the non-traded goods sector is relatively labour intensive.

14 Measured in terms of foreign GDP.

15 In "long-hand" algebra,

$$PV(s;tb+a^*;r^*+\gamma-n) \equiv \int_s^\infty [tb(v)+a^*(v)]\, e^{-\int_s^v [r^*(u)+\gamma(u)-n(u)]du}\, dv.$$

16 Two equivalent ways of writing (13) are

$$-\frac{E(s)F^*(s)}{P(s)} = PV\left[s;\ TB + \frac{EA^*}{P};\ r^* + \gamma\right] \qquad (13')$$

and

$$-F^*(s) = PV\left[s;\ \frac{PTB}{E} + A^*;\ i^*\right] \qquad (13")$$

Equation (13') has the current real value of the external debt matched by the present discounted value of future real primary surpluses, using the real exchange-rate-depreciation-corrected foreign real interest rate $r^* + \gamma$ to discount the future primary real surpluses. Equation (13") has the current foreign currency value of the nation's external debt matched by the present discounted value of future primary surpluses measured in foreign currency, using the foreign nominal interest rate $i^* \equiv r^* + \pi^*$ to discount the future primary foreign currency surpluses.

17 Technically, the condition is:

$$\lim_{\tau\to\infty} -f^*(\tau)e^{-\int_s^\tau [r^*(u)+\gamma(u)-n(u)]du} = 0$$

or

$$\lim_{\tau\to\infty} -\frac{E(\tau)F^*(\tau)e^{-\int_s^\tau [r^*(u)+\gamma(u)]du}}{P(\tau)} = 0$$

or

$$\lim_{\tau \to \infty} - F^*(\tau) e^{-\int_s^\tau i^*(u)du} = 0$$

18 I am concerned with solvency only, not with optimal or time-consistent borrowing strategies. It may well be optimal, under certain conditions, to run current account surpluses or even to become a net external creditor.

19 This section draws on Buiter [1983, 1985] and Anand and van Wijnbergen [1987].

20 Depending on the accounting conventions one adopts, J could include the operating surpluses (deficits) of the state enterprise sector. Alternatively one could include these in τ. Note that it is ***cash returns*** that enter into the accounts through ρ, not the implicit social rate of return.

21 There again is a transversality or terminal condition to get from (16) to (19) given by

$$\lim_{\tau \to \infty} d(\tau) \exp(-\int_s^\tau [r^*(u) + \gamma(u) - n(u)]du) = 0$$

22 For simplicity $r = 0$ and $i = \pi = \mu$ in Figure 6.

FIGURE 1

Production and consumption of traded and non-traded goods and the real exchange rate

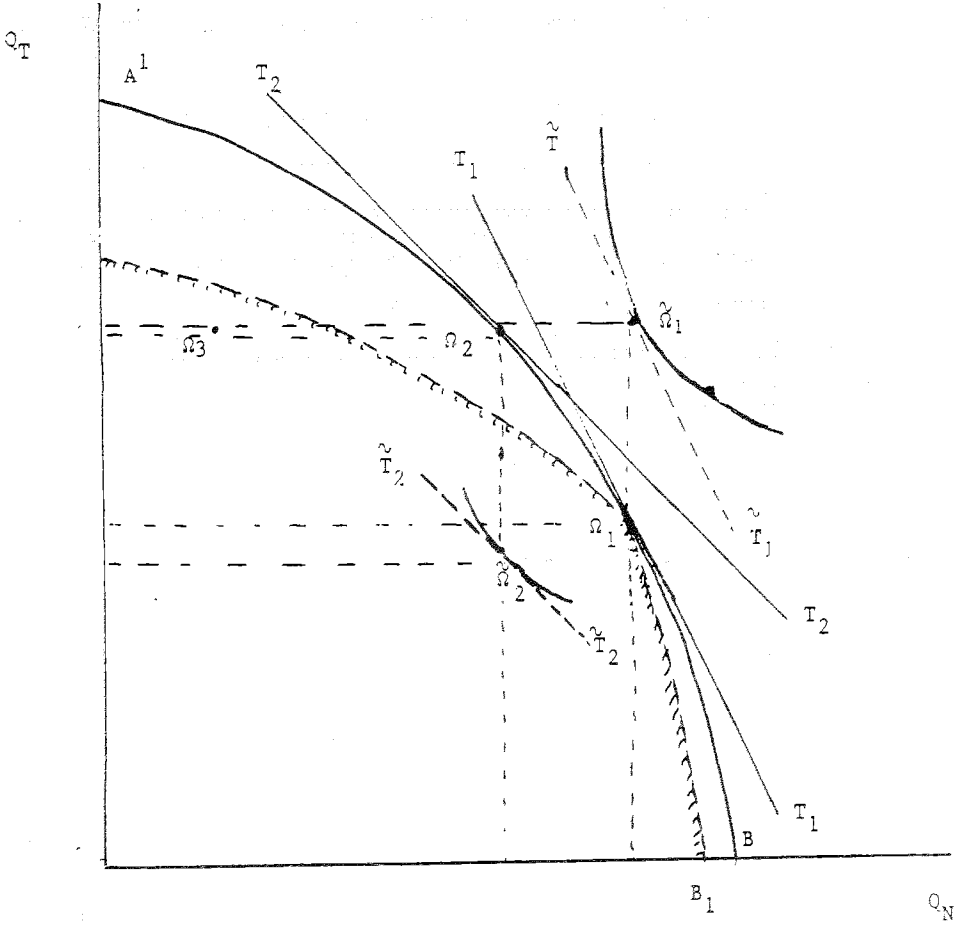


FIGURE 2A

Production and consumption of exportables and import-competing goods and the terms of trade

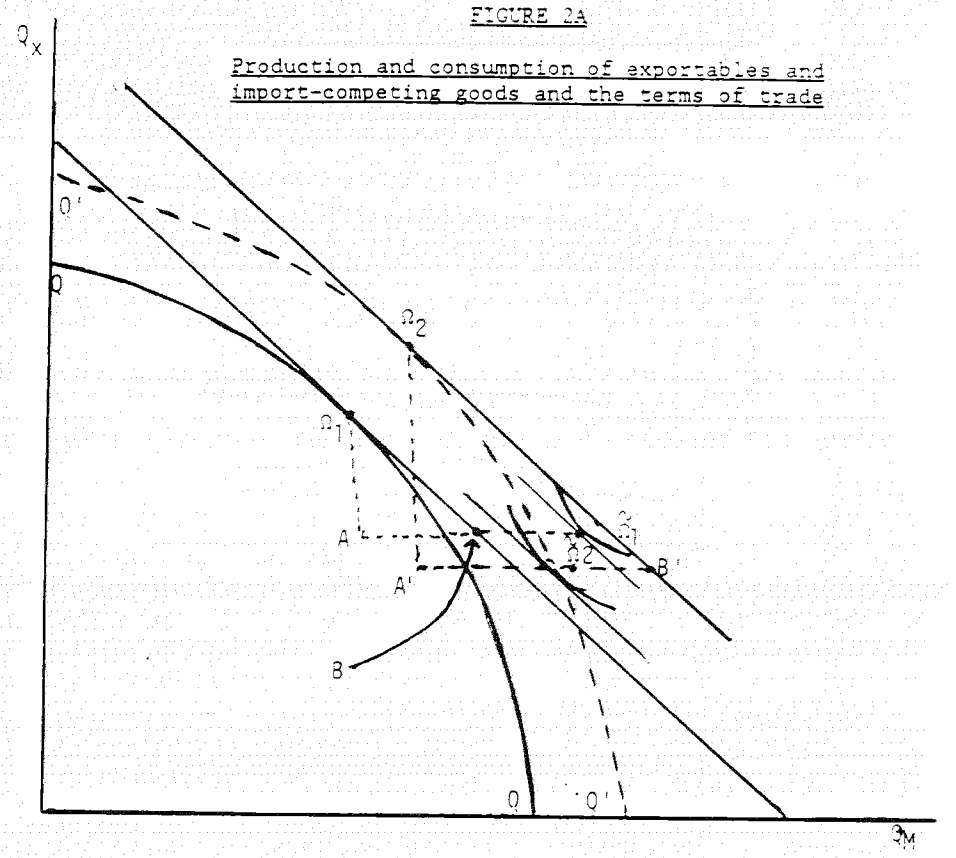


FIGURE 2B

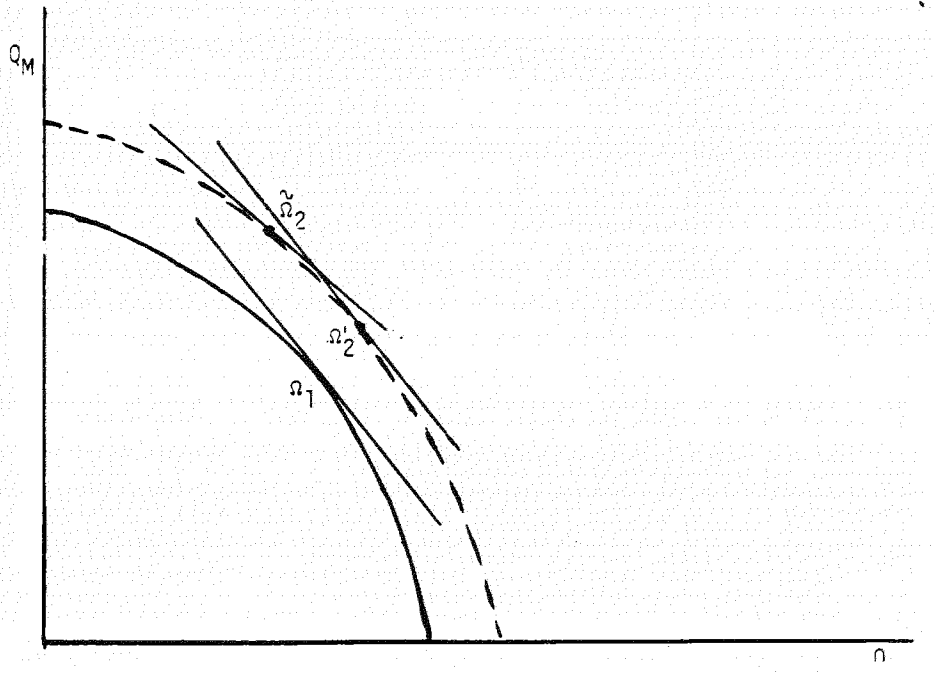
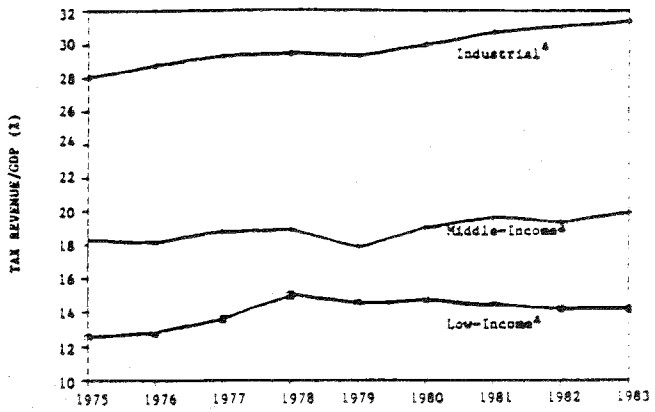


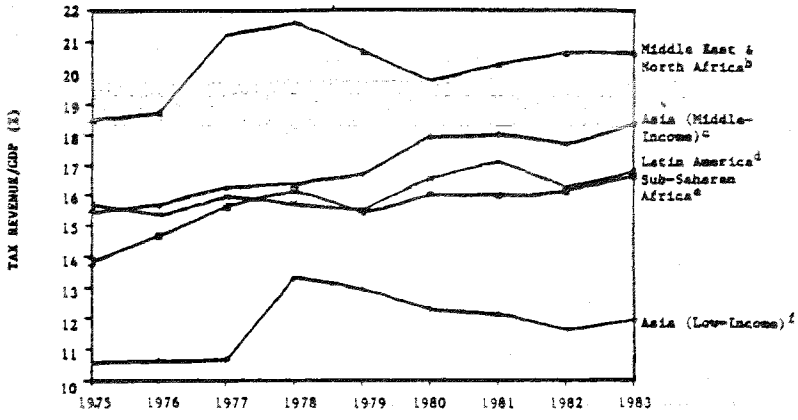
FIGURE 3

Trends in tax to GDP ratios, 1975-1983

a) By Income



b) By Region (Developing countries only)



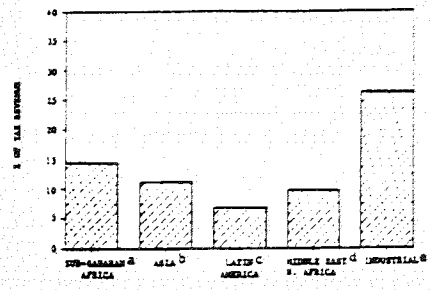
Note: Figures are unweighted, representing the average pattern for countries in the sample. The period, 1975-83, yields the largest comparable sample based on available data.

a. Industrial sample includes seventeen countries, middle-income includes thirty four countries, and low-income includes eleven countries.
b. Includes Burkina Faso, Burundi, Cameroon, Liberia, Kenya, Mali, Senegal, Tanzania, Zaire, and Zimbabwe.
c. Includes Indonesia, Korea, Malaysia, Singapore, and Thailand.
d. Includes Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Guatemala, Mexico, Nicaragua, Panama, Paraguay, Uruguay, and Venezuela.
e. Includes Egypt, Iran, Israel, Morocco, Oman, Syria, Tunisia, Turkey, and Yemen.
f. Includes India, Nepal, Pakistan, and Sri Lanka.

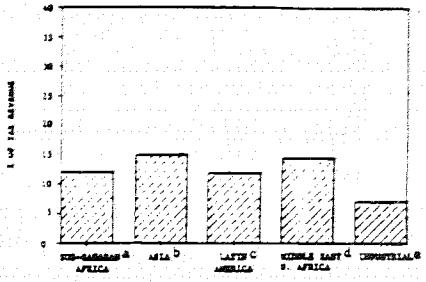
FIGURE 4

Regional variation in direct taxes, 1983
(as a per cent of total revenue)

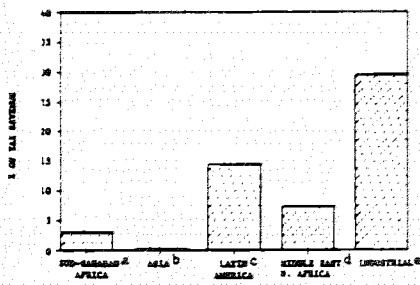
a) Personal Income Taxes



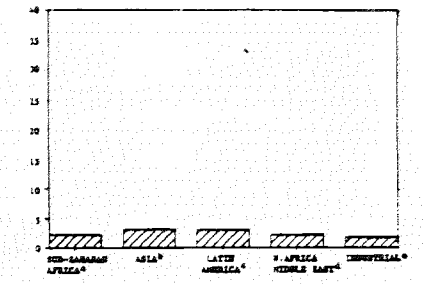
b) Company Income Taxes



c) Social Security Taxes



d) Property and Wealth Taxes



Note: Figures are unweighted, representing the average pattern for countries in the sample. The period, 1975-83, yields the largest comparable sample based on available data.

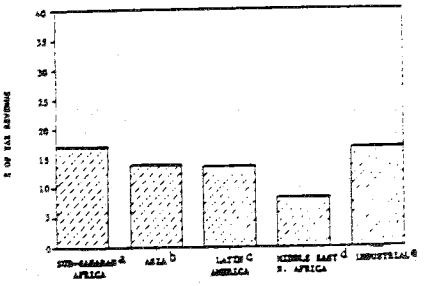
a. Sub-Saharan Africa includes Burkina Faso, Burundi, Cameroon, Gambia, Lesotho, Liberia, Mali, Senegal, Tanzania, and Zaire.
b. Asia includes India, Indonesia, Korea, Malaysia, Nepal, Pakistan, Singapore, Sri Lanka, and Thailand.
c. Latin America includes Argentina, Barbados, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Guatemala, Guyana, Mexico, Nicaragua, Panama, Paraguay, Uruguay, and Venezuela.
d. Middle East/North Africa includes Egypt, Iran, Israel, Morocco, Tunisia, Turkey, and Yemen (Arab Republic).
e. Industrial includes WDR industrial market economies except Japan and New Zealand.

Source: IMF, Government Finance Statistics, 1986.

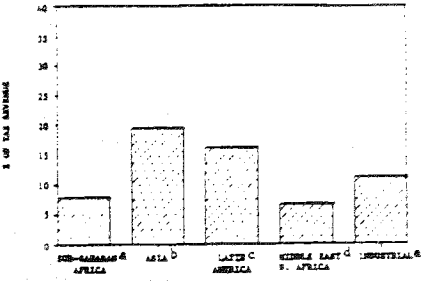
FIGURE 5

Regional variation in indirect taxes, 1983
(as per cent of total tax revenue)

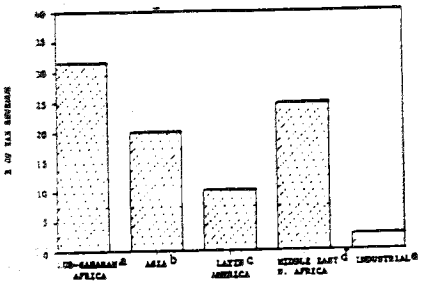
a) Broad-based Taxes (Sales, VAT, and Turnover)



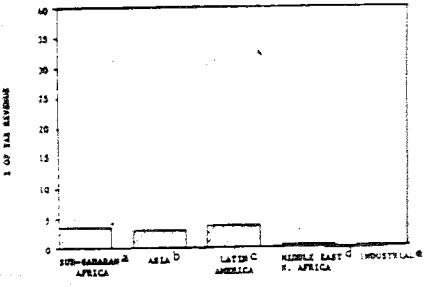
b) Excise Taxes



c) Import Taxes



d) Export Taxes



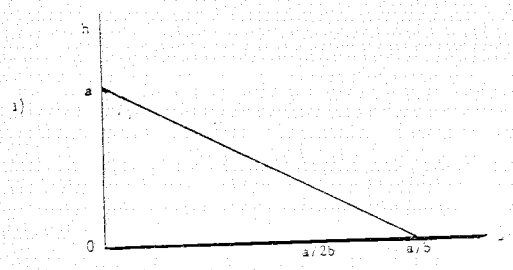
Note: Figures are unweighted, representing the average pattern for countries in the sample. The period, 1975-83, yields the largest comparable sample based on available data.

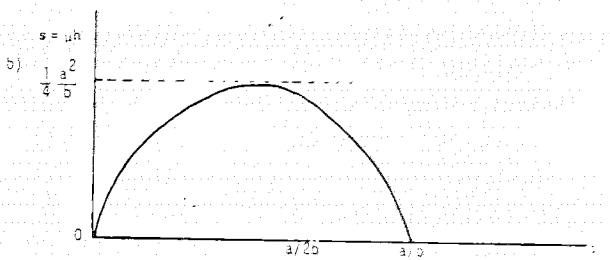
a. Sub-Saharan Africa includes Burkina Faso, Burundi, Cameroon, Gambia, Lesotho, Liberia, Mali, Senegal, Tanzania, and Zaire.
b. Asia includes India, Indonesia, Korea, Malaysia, Nepal, Pakistan, Singapore, Sri Lanka, and Thailand.
c. Latin America includes Argentina, Barbados, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Guatemala, Guyana, Mexico, Nicaragua, Panama, Paraguay, Uruguay, and Venezuela.
d. Middle East/North Africa includes Egypt, Iran, Israel, Morocco, Tunisia, Turkey, and Yemen (Arab Republic).
e. Industrial includes WDR industrial market economies except Japan and New Zealand.

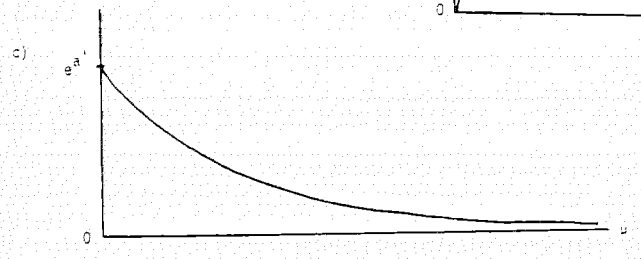
Source: IMF, Government Finance Statistics, 1986.

FIGURE 6

Money demand and seigniorage in the long run







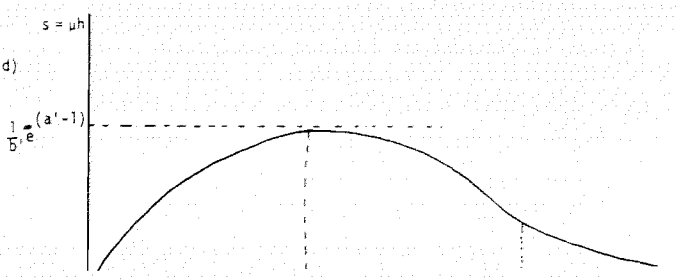


TABLE 1

Variations in tax composition for countries grouped by income, 1975 and 1983[a]

Tax category[b]	Low-income[c] 1975	Low-income[c] 1983	Middle-income[d] 1975	Middle-income[d] 1983	Industrial[e] 1975	Industrial[e] 1983
Domestic income	19.6	19.9	30.5	31.4	34.0	33.3
Individual	(9.9)	(9.6)	(9.4)	(10.7)	(26.4)	(26.2)
Corporate	(8.4)	(8.4)	(13.1)	(13.5)	(7.3)	(7.1)
Other direct taxes	7.9	7.3	18.5	17.0	31.7	33.1
Social security	(1.0)	(2.2)	(12.9)	(10.1)	(28.2)	(29.6)
Property	(3.4)	(2.5)	(2.8)	(2.6)	(2.1)	(1.8)
Domestic commodity	29.0	35.8	26.6	30.8	29.9	30.6
Sales, VAT, turnover	(11.1)	(18.8)	(7.9)	(10.5)	(16.0)	(16.6)
Excises	(11.1)	(13.1)	(13.1)	(13.3)	(10.9)	(11.1)
International trade	43.6	37.0	24.4	20.8	4.5	2.9
Import	(32.9)	(32.6)	(19.6)	(16.2)	(4.4)	(2.7)
Export	(7.7)	(3.8)	(3.5)	(1.4)	(0.1)	(0.2)

Notes:
a. Figures are unweighted representing the average pattern for countries in the sample.
b. Figures for subcategories do not add up to the figure for each category due to the presence of smaller unallocated taxes.
c. Low-income sample includes eleven countries.
d. Middle-income sample includes thirty-six countries.
e. Industrial market includes nineteen countries.

Source: *Government Finance Statistics*.

TABLE 2

Some estimates of capital flight in new industrial countries
(Billions U.S.$)

	1979	1980	1981	1982	1983	1984
Argentina	2.2	3.5	4.5	7.6	1.3	-3.4
Brazil	1.3	2.0	-1.4	1.8	0.5	4.0
Korea	-0.5	-0.7	-0.8	0.5	-0.7	-0.6
Mexico	-1.1	2.2	2.6	4.7	9.3	2.6
Philippines	0.0	-0.1	1.3	0.0	-1.5	-1.8
Venezuela	3.0	4.8	5.4	3.2	3.1	4.0

Notes: These estimates use Wm. Cline's definition of capital flight as computed by Cumby and Levich.

Source: *Cumby and Levich* (1987).

TABLE 3

Revenue from seignorage on currency in selected countries
(average 1980-85)

	Seignorage revenues (increase in currency as per cent of GDP)	Ratio of currency holdings to GDP (per cent)	Currency growth (per cent) per year	Inflation (per cent) per year
High seignorage revenues				
Argentina	4.0	3.8	269	274
Bolivia	6.2	6.1	438	506
Ghana	2.2	6.1	45	54
Sierra Leone	2.4	7.7	35	43
Moderate seignorage revenues				
Brazil	1.0	1.4	129	147
Israel	1.1	1.3	165	181
Mexico	1.5	3.7	50	58
Peru	1.9	3.1	92	97
Turkey	1.2	3.8	38	46
Low seignorage revenues				
Bangladesh	0.6	4.0	16	12
Colombia	0.8	4.7	18	22
Cote d'Ivoire	0.7	9.2	8	7
Dominican Republic	0.7	4.6	16	15
Korea	0.5	4.3	13	9
Nigeria	0.8	7.2	13	16
Venezuela	0.4	4.5	8	12

Notes: The first column is calculated as the end-of-year currency outside banks (IFS line 14a) minus the end-of-year value of the previous year, divided by the current year GDP. The second column is the ratio of the average of beginning-of-year and end-of-year currency outside banks to current GDP. The third column is the percentage change in currency outside banks from end-of-year to end-of-year. The final column is the percentage change in CPI (IFS line 64) from December to December. The geometric average of growth rates is used for columns three and four; the arithmetic average of ratios is used for columns 1 and 2.

Source: *IFS*

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