3

The Link between Budget Deficits and Inflation: Some Contrasts between Developed and Developing Countries

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I INTRODUCTION

Although the precise nature of the relationship is debated, there is widespread recognition among economists that the growth of the money supply affects inflation. Less well understood is the link between budget deficits and inflation. Until the 1930s most economists were suspicious of budget deficits on the grounds that sooner or later they had to be monetized. This suspicion was particularly strong among British economists. Bresciani-Turron (1937), in his classic study of the Weimar hyperinflation, contrasted German views with 'the "English" theory, . . . vigorously upheld by the representatives of Great Britain in the Reparations Commission and in the Guarantees Committee, according to which the fundamental cause of the depreciation of the mark was the budget deficit, which provoked continued issues of paper money'. In the early post-war decades concern about the inflationary repercussions of deficit financing abated, perhaps under the influence of the Keynesian revolution. But in the last few years interest in the question has revived. The rapid growth of government debt in the leading industrial countries has raised doubts about the long-run sustainability of current fiscal policies, while in several developing countries inflation has accelerated in the aftermath of the debt crisis.

Recent contrasts between developed and developing countries provide the immediate motive for this chapter. In some of the largest developed countries, notably the USA, declining inflation has been reconciled with unusually high budget deficits. In many developing countries inflation has risen despite harsh programmes of fiscal

austerity. The conjunction of rising inflation with fiscal austerity has been most obvious and disturbing in Latin America. How are the differences between developed and developing countries to be explained? And how do they illustrate the linkage between fiscal policy and inflation?

The chapter will start with a simple and general statement of the relationship between the budget deficit and the growth of money national income in a long-run steady state. The relationship does not say much in itself, but it focuses attention on the ratio of public sector debt to national income (the debt to income ratio). Some conjectures on the differing experiences of developed and developing countries are then made. Monetary factors also need to have a role and the next section introduces them by comparing the framework of financial control in developed and developing countries. The message of the concluding section is that in all countries responsible fiscal policies are a condition for price stability.

II BUDGET DEFICITS AND INFLATION: A SIMPLE RELATIONSHIP

In a long-run steady state the debt to income ratio is constant. Let a denote the constant ratio of debt to income. Then

$$D = aY$$

and

$$\Delta D = a\Delta Y$$

where D is the national debt, Y national income and Δ signifies changes in the variables. But the change in the debt is the same as the budget deficit (denoted by B), and so

$$\frac{B}{Y} = a\frac{\Delta Y}{Y}$$

Here $\Delta Y/Y$ is, of course, the rate of increase of money national income and is equal to the rate of increase in prices plus the rate of increase in real output, which may be denoted by i (inflation) and g (growth) respectively. We therefore have

$$\frac{B}{Y} = a(i + g) \tag{3.1}$$

As long as the budget deficit to income ratio is kept equal to the right-hand side of this equation year after year, the debt to income ratio will be constant.[1]

Equation 3.1 shows that, in steady state and with an unchanging growth rate, a given budget deficit to income ratio will be associated

with higher inflation the lower is the debt to income ratio. The inverse relationship between inflation and the debt to income ratio is critical to our later discussion. It suggests that a country has more scope to run a large budget deficit, without inflationary repercussions, the more extensive is the market in government debt and the more prepared are its citizens to hold claims on government. In other words, a high debt to income ratio gives more room for manoeuvre with fiscal policy than a low debt to income ratio. An analysis of the determinants of the demand for public sector debt is therefore important to policy makers concerned about both the short-run options in demand management and the long-run inflation consequences of fiscal actions.

An extension of these ideas is to differentiate between domestic and external holders of government debt. If in steady state the two categories of debt holder have claims on government which are a constant proportion of domestic income, then

$$D_1 = a_1 Y$$
$$D_2 = a_2 Y$$

where D_1 is debt held by home residents and D_2 is debt held by foreign residents, and

$$D = D_1 + D_2$$

So

$$\Delta D = a_1 \Delta Y + a_2 \Delta Y$$

and

$$\frac{B}{Y} = a_1 \frac{\Delta Y}{Y} + a_2 \frac{\Delta Y}{Y}$$

$(a_2 \Delta Y)/Y$ is the net sale of public sector debt to non-residents as a proportion of national income, which may be denoted by f. Then we have

$$\frac{B}{Y} = a_1(i + g) + f \tag{3.2}$$

Equation 3.2 identifies further long-run trade-offs in the conduct of fiscal policy. If a government is able to attract substantial external finance, it can run a budget deficit without inflation risks. In a steady state the availability of external finance is, of course, only growing in line with national income since the external debt to income ratio is assumed constant.

Neither equation 3.1 nor equation 3.2 is altogether suitable for discussing the passage from one steady-state path to another. However,

some observations about the comparison of different steady states are justified. It is evident that the government economy with a strong domestic demand for government debt and considerable external creditworthiness can, on a sustained basis, run a higher budget deficit to income ratio without inflation than that of an economy with weak domestic demand for government debt and little external creditworthiness. A buoyant trend rate of economic growth also obviates the inflationary dangers of budget deficits.

III THE DEMAND FOR PUBLIC SECTOR DEBT IN DEVELOPED AND DEVELOPING COUNTRIES

The characteristic assumption in economic analysis is that the government's debt is free from default risk, at any rate to domestic creditors. This assumption has little justification in fact since there are many examples of governmental failure to meet obligations. Even the British government has had its problems. Surprising though it may seem today, part of the rationale for the establishment of the Bank of England was that savers would have more confidence in an independent, privately-owned institution than in the crown itself. In the early 1690s there were still memories of the Stop of the Exchequer in January 1672 when interest payments on Charles II's £1 million debt were suspended.

The belief that government debt is free from default risk stems from the state's right to levy taxes. In principle, this right is absolute and permits government to take all, or at least a very high share, of a nation's income. The ability to capture resources implies that government has a greater ability to service debt than any private-sector agency. However, in reality there are limits to taxable capacity. These limits arise for several reasons. High taxation acts as a drag on initiative and effort, and encourages evasion; the possibility of evasion creates administrative strains for the tax-collecting service; and the ease with which the tax-collecting service can meet these strains depends partly on technology, but also on taxpayer ethics. Taxpayer ethics vary from country to country, but are clearly enhanced if citizens identify their governments with their perception of their nation's interests.

These remarks suggest that potential taxable capacity is likely to be higher in developed than in developing countries, where potential taxable capacity is defined loosely as the proportion of national income the government can extract without excessive administrative cost or economic distortion. Developed countries have a number of advantages. Most obviously, good standards of education and literacy simplify

the tax collectors' task. This may seem an unimportant consideration in the modern world, but there is no doubt that many developing countries do not possess the administrative infrastructure for the government to raise taxes equivalent to more than a fifth or a quarter of national income. Kaldor's recommendations for India in the 1950s, that it adopt a sophisticated mixture of an annual wealth tax, capital gains tax, expenditure tax and gifts tax, have been judged 'a transfer of inappropriate technology'. According to Little (1974), 'The Kaldor taxes had a negligible yield'.[2] The administrative difficulties in raising taxes are aggravated by the weak sense of loyalty felt by the citizens of most developing countries towards their political elites. The lack of citizen support can often be blamed on the selfish and corrupt motives of political leaderships, these being particularly transparent in one-party states and military dictatorships.

The broad generalization that potential taxable capacity is higher in developed than in developing countries is surely valid. It follows that acceptable ratios of public sector debt to national income are also higher in the developed countries. This is a key conclusion for our discussion. In essence, developing country governments cannot borrow domestically as much as their developed country counterparts because savers know that their ability to service debt is constrained by taxpayer resistance. A further obstacle is that markets in government debt are usually primitive, with little liquidity and high transactions costs, in developing countries. Considerations similar to those responsible for restricted taxable capacity explain this backwardness. Without good educational standards and recognized ethical codes, it is difficult for markets in government securities to become established.

In many developing countries, governments try to overcome the unwillingness of domestic residents to hold much of their debt by direct intervention in the savings process. These interventions typically bring into stronger relief the competition between public and private sectors for resources and exacerbate citizen distrust. Their long-run effect may therefore, ironically, be to reduce the ratio of domestically-held government debt to national income. A common arrangement is for the government to require savings institutions, notably insurance companies and social security funds, to hold a minimum proportion of their assets in public sector debt. It has been noted that, 'Such practices make it difficult for an active bond market with broad participation by the general public to develop' (Agtmael, 1984). More seriously, the imposition of compulsory investment patterns reduces the attractions of saving through institutions and makes social security contributions indistinguishable from taxation. The eventual effect is to lower the amount of government debt savers voluntarily hold in their portfolios.

Government restrictions on the disposition of bank assets ought to be more effective as a means of channelling resources into the public sector, since there should be an irreducible minimum demand to hold money balances. If people are certain to hold a particular quantity of bank deposits, the government can be equally certain to capture their savings by forcing the banking system to keep part of its assets in public sector instruments. For this reason onerous reserve requirements are widespread in the developing world. There is, however, a limit to such practices. If reserve requirements are excessive by comparison with banks' functional requirements and reserve assets yield a low rate of return, the interest rate of deposits is adversely affected. Money holders react by economizing on the balances they keep in the banks, either shifting funds to non-bank intermediaries (such as the *financieras* so common in Latin America) or storing their wealth in non-monetary form (land, precious metals).[3] Governments' final and most secure base for debt issuance is the stock of high-powered money. People need a means of payment and, however much they run down their bank balances, they must still have a transactions demand for the fiat money issued by the central bank. These central bank liabilities can be matched on the assets side by claims on government. But the ratio of high-powered money to national income is quite low, at perhaps 5 to 10 per cent, in financially undeveloped societies. In consequence, high-powered money does not provide the government with a major avenue for funding budget deficits.

Unhappily, political leaders in developing countries do not always appreciate the severity of the financial constraints they face. They are tempted to use the stock of high-powered money (and so also to some extent the banking system's deposits) not as a base for debt issuance, but as a tax base. Budget deficits may be financed wholly at the central bank, leading to rapid growth in high-powered money and fast inflation. Inflation erodes the real value of the central bank's (and, in effect, the government's) liabilities, transferring control of resources from the private to the public sector. Citizens retaliate by holding a lower proportion of their assets in transactions money form and by switching out of the domestic currency into an internationally convertible currency. The outcome may be a comprehensive 'dollarization' of the economy. Argentina and Israel in recent years illustrate the process. Exchange controls may be introduced or tightened to stop this, but they are of limited effectiveness when the government is behaving with manifest financial irresponsibility. The eventual result is that the ratio of domestically-held public sector debt to national income is lower than if the government had tried to extract resources by more honest and straightforward means.

Suspicion of the political process may, because of bitter experiences in the past, become unduly intense. As a result the debt to income ratio in a developing country may be lower than justified by taxable capacity. This creates an opportunity for foreign investors to lend to the governments concerned. Their loans are usually denominated in the convertible currency of a developed economy, which protects them against the risks of inflation, financial restrictions and exchange control which worry domestic residents. In terms of our equation 3.2 the government of a developing economy may be able partly to neutralize the constraints on fiscal policy imposed by domestic aversion to its debt (i.e low a_1) by running an external payments deficit (i.e. positive f).

Our discussion suggests a schematic contrast between the determinants of the debt to income ratio in developed and developing countries (table 3.1). A warning has to be given that it is perhaps excessively stylized. It should not be taken as precluding intermediate cases which mix the characteristics of 'developed and developing countries' in our sense of those terms. Italy and other Mediterranean countries exemplify the mixing of characteristics.[4] Moreover, although much has been said to explain the differences between developed, intermediate and developing countries, our discussion has not been able to fix debt to income ratios. In steady state this ratio is constant by assumption, but we have not been able to say what precise value it should take.

IV THE RELATIONSHIP BETWEEN THE DEBT TO INCOME RATIO, THE REAL INTEREST RATE AND THE GROWTH RATE

This gap in the analysis reflects the real world, as governments have considerable discretion about the debt to income ratios at which their economies settle. However, it is implicit in our discussion that this discretion is not unlimited, since we have argued that debt to income ratios are systematically lower in developing countries than developed. The contrast between them suggests the presence of a constraint. The constraint could derive from an assumed tendency of the real interest rate to increase with rises in the debt to income ratio. A well-known result in public finance theory is that, if the real interest rate exceeds the growth rate, and the budget deficit (exclusive of debt interest) is zero or positive, interest payments on government debt will explode. This clearly cannot be reconciled with steady state. So an excessive debt to income ratio accompanied by a real interest rate above the growth rate also cannot be reconciled with steady state. The debt to income ratio can take the value at which the real interest rate equals

Table 3.1 *Determinants of the debt/income ratio: stylized contrasts between developed and developing countries*

	Developed countries	*Developing countries*
National characteristics	Strong citizen identification with nation-state	Weak citizen identification with nation-state
	High educational attainment and universal literacy	Low educational attainment and literacy rate
Value of debt to income ratio	In range from very low to high (0.05 to 1.25)	In range from very low to high (0.05 to 0.25)
Value of tax to income ratio	Moderate to high (0.30 to 0.70)	Low (0.10 to 0.30)
Characteristics of financial markets	Large, liquid and well-informed market in government debt	Small, primitive and illiquid market in government debt
	Government's high creditworthiness permits:	Government, unable to borrow on large scale, tries to extract resources by:
	(i) Exchange freedom	(i) Exchange control
	(ii) Liberalized banking system	(ii) Regulated banking
	(iii) Low reserve requirements on banks	(iii) High reserve requirements on banks
	(iv) Financial institution free in asset allocation decisions	(iv) Financial institution directed to invest in government debt
	(v) Social security system actuarially sound or subsidized by government	(v) Social security system lends to and subsidizes government
	(vi) Low inflation	(vi) Inflation used as a tax instrument

the growth rate or it can take any value beneath that. But it cannot take any higher value.

This idea can be expressed simply as shown in figure 3.1. The real interest rate r is made a positive function of the debt to income ratio in the curves AA^1, BB^1 and CC^1 below. The curve AA^1 can be thought of as describing the relationship between the real interest rate and the debt to income ratio in a developing country. It is quite flat for very

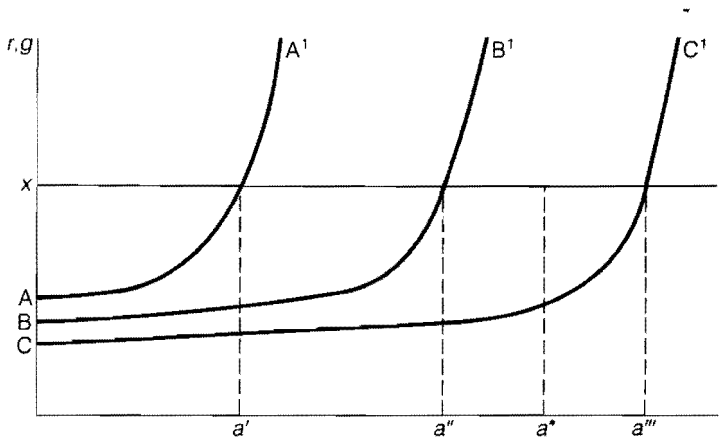

Figure 3.1 Critical debt to income ratios are typically higher in more developed economies

low values of the debt to income ratio, due to the interest-inelastic demand for high-powered money, but then rises steeply at a low value of the debt to income ratio because of the absence of an effective market in government debt. The curve CC^1 – which is much further to the right – is the same relationship in a developed country. As savers have considerable confidence in governments' ability to service debt at low or moderate debt to income ratios, the curve rises gently until a danger zone rightwards of a^* is reached. Here there is increased concern about debt servicing ability and, if the government is to induce savers to hold extra debt, it must increase the real interest rate sharply. The curve BB^1 has roughly the same shape as curve CC^1, but lies between AA^1 and CC^1, and can be regarded as describing the circumstances of an intermediate economy.

Let us suppose, for the sake of expository convenience, that the growth rate is the same in all countries at x per cent a year. Then the values of the debt to income ratio at which the real interest rate equals the growth rate are a' in the developing country, a'' in the intermediate economy and a''' in the developed economy. These could be termed the critical values of the debt to income ratios. Fiscal policy is sustainable if the debt to income ratio stays at or beneath its emergency value; it is unsustainable if it goes any higher. The critical debt to income ratio is the maximum value. We have not said anything to fix the minimum value which could, of course, be negative.

V IMPLICATIONS OF THE DIFFERENCE IN DEBT TO INCOME RATIOS BETWEEN DEVELOPED AND DEVELOPING COUNTRIES

In our discussion of the simple theoretical relationship between budget deficits and inflation we saw that, when comparing steady states, budget deficits are less inflationary the higher is the domestic demand for the government's debt (measured as a proportion of national income) and the greater its external creditworthiness. By contrasting the determinants of debt to income ratios in developed and developing countries we are able to understand the importance of this conclusion for the conduct of fiscal policy. Because debt to income ratios are low in developing countries their governments have little room for deficit financing unless they have access to external funds. In developed countries deficit financing can be pursued on a larger scale, without inflationary repercussions, because of high debt to income ratios. The scope for so-called reflationary measures or supply-side tax cuts in developed countries is also increased by their good reputations in international financial markets. These reputations may enable them to run persistent and substantial payments deficits without much difficulty.

Our analysis also helps in understanding the historical popularity of copy-book maxims for fiscal policy, in particular the balanced budget rule. Large markets in government debt, and the associated high debt to income ratios, are possible only in societies with abundant legal, accounting and financial expertise and with long records of political stability. Until the second half of the nineteenth century there were relatively few such societies. Moreover, powerful international capital markets – able safely to transfer funds in considerable volume between financial centres – are, from an historical standpoint, a recent innovation. Although early small-scale examples could be cited, they also have only existed on a large scale since the second half of the nineteenth century. Low debt to income ratios and limited external finance therefore constrained governments' ability to incur debt. The balanced budget rule was a sensible method of organizing public finances and effectively precluded the use of 'fiscal policy' as an instrument of demand management. The cogency of the balanced budget prescription was reinforced by the low rates of economic growth, usually a mere 1 or 2 per cent a year, which prevailed in most countries until the twentieth century.

It is important to make this point because some economists have urged that Keynesian ideas on fiscal policy have a general applicability to both developed and developing countries.[5] In fact, the conditions for successful programmes of deficit financing on Keynesian lines do

not hold in poor and backward countries today, just as they did not hold in poor and backward countries in the past. As Bagehot warned in 1867, 'Many persons have not a distinct perception of the risk of lending to a country in a wholly different state of civilisation . . . They forget that national good faith is a rare and recent thing, and they expect to find it where the condition of its existence cannot be found.[6]

VI RECENT ILLUSTRATIONS OF THE LINK BETWEEN BUDGET DEFICITS AND INFLATION

The Debt Crisis and Accelerating Inflation in Latin American Countries in the early 1980s

Our analytical framework can now be used to throw light on the inflationary process in Latin American countries since the onset of the debt crisis in the summer of 1982. Before the debt crisis, Latin American countries were borrowing heavily abroad, with syndicated credits from the international banking system being the most common form of finance. The ratio of the current account deficit to national income varied between countries, but was typically in the 3 to 7 per cent range. The capital inflow from abroad accrued mainly to the public sector, with the syndicated credits being acceptable to bankers because they were claims on sovereign states, not risky private sector companies. The access to external finance enjoyed by Latin American countries in the late 1970s was a new phenomenon, made possible partly by the recycling of petrodollars, and gave them leeway to widen budget deficits without provoking inflation. By 1982 Brazil, Mexico and Argentina all had public sector deficits amounting to more than 15 per cent of gross national product. In the late 1970s a more typical figure would have been 10 per cent.

The ratios of domestically-held public sector debt to national income are uniformly low in Latin America, because of the profound scepticism with which government is regarded. In Brazil, which is fortunate compared to neighbouring countries because it has never suffered extreme political turmoil, there is a market in government debt. But it is small scale and short term, and is dominated by two instruments, national treasury indexed bonds (ORTNs) and national treasury bills (LTNs). In 1978 their total value was 357.5 billion cruzeiros, equal to about 10 per cent of national income, with 52.5 billion held by the central bank and the publicly-owned Banco de Brasil, and most of the remainder with the banking system. The situation in Brazil was typical and it would be reasonable to take 10 per cent as the debt to income ratio in

Latin American countries before the debt crisis. As a highly simplifed but nevertheless instructive exercise, we can insert the suggested values for the key ratios in our equation 3.2 to derive the steady-state inflation rate in Brazil in the late 1970s. It turns out to have been 42 per cent (see box 3.1 below). Actual inflation rates were similar, increasing from 29.2 per cent in 1975 to 77.2 per cent in 1979 but averaging 46.5 per cent over the five years.

The main effect of the debt crisis for Latin America was to curtail access to external finance. Although foreign creditors were sometimes prepared to add interest to loan principals and even to reschedule old debts, new money was available only in very limited amounts. The interest payments for some countries were so heavy that they continued to run current account deficits despite the achievement of large trade surpluses. But in the cases of Brazil and Mexico the current account was in balance or surplus in 1984. The improvement brought considerable relief to international bankers, many of whom judged that the debt crisis was largely overcome. However, this view was too

Box 3.1 Inflation in Brazil: steady-state outcomes before and after the debt crisis

After rearrangement and assuming the whole of the current account deficit to be financed by foreign purchases of public sector debt equation 3.2 gives

Inflation rate

$$= \frac{\text{Budget deficit to income ratio} - \text{Payments deficit to income ratio}}{\text{Debt to income ratio}} - \text{Growth rate}$$

(i) Inflation in Brazil before the debt crisis

Budget deficit to income ratio	=	10%
Debt to income ratio	=	10%
Current account deficit to income ratio	=	5%
Growth rate p.a.	=	8%

Inserting these values of the variables in the equation, inflation is 42% p.a.

(ii) Inflation in Brazil after the debt crisis

Budget deficit to income ratio	=	20%
Debt to income ratio	=	10%
Current account payments balanced		
Economic growth negligible		

Using these values of the variables in the same way, inflation is 200%

sanguine as it neglected the domestic inflationary consequences of the withdrawal of external finance. In Brazil the budget deficit rose to 20 per cent of national income in 1983 and 1984, mainly because maxi-devaluations to correct the payments deficit led to inflation, and inflation raised the costs of monetary correction on the national debt. We can again calculate the steady-state inflation rate implied by our equation. It is 200 per cent, not far from the actual rate of 220 per cent recorded in late 1984. Of course, comparison of steady-state, formula-derived solutions with real-world situations is rather mischievous. In the dynamics of real life it is not legitimate to treat the ratios as steady-state constants, and the process of change from one set of values of the ratios to another itself affects inflation. Nevertheless, the fit between the answers given by our approach and recorded inflation rates is suggestive. The low debt to income ratios in Latin America help to explain why budget deficits soon led to escalating inflation after the onset of the debt crisis.[7]

Reagonomics and Decelerating Inflation in the USA in the mid 1980s

The behaviour of inflation in the USA in the mid 1980s appears anomalous. The tax cuts associated with Reagonomics have resulted in large budget deficits and these budget deficits might have been expected to generate a higher rate of price increases. In fact, inflation has fallen sharply. How is this case accommodated within our analytical framework? Can the combination of an increased budget deficit and reduced inflation be reconciled with it?

Equation 3.2 shows that a higher budget deficit to income ratio may not lead to more inflation if the debt to income and foreign finance of the public sector (as a proportion of national income) increase. Both developments are to be observed in the USA in recent years. American government debt has risen faster than national income since 1981, with the result that the debt to income ratio has gone up from 30 per cent to over 40 per cent today. The public sector payments deficit is more awkward to handle. As direct foreign purchases of US government debt are a relatively small proportion of gross national product, they are not powerful enough by themselves to have influenced macroeconomic trends. But the net foreign acquisition of claims on the US private sector has been very large and this has made it possible for domestic savings to be channelled towards government debt on a substantial scale. In this indirect sense the whole current account deficit has been available to finance the budget deficit. The current account has moved from small surplus in the late 1970s to a deficit of about 3 per cent of national income today.

It could be argued that the changes in the debt to income ratio and the ratio of the current account deficit to income contribute to understanding the anomalous behaviour of American inflation. When President Carter was in office, low real interest rates, a weak dollar and a current account surplus were associated with 5 to 10 per cent inflation despite a modest budget deficit; under President Reagan high real interest rates, a strong dollar and a current account deficit have been accompanied by low inflation despite a budget deficit which is of record dimensions. But, although the relevance of the debt to income ratio and the payments position in any account of US inflation cannot be in doubt, it would be improper to insert the values of these variables in equation 3.2 to 'explain' changes in inflation between Carter and Reagan (see Box 3.2). The USA is not and never has been in a steady state. Its departure from such a condition is particularly obvious today, when the real interest rate on government debt is above the growth rate.

The most that can be said is that the plight of Latin America and the apparent initial success of Reagonomics can be analysed with the help of the variables highlighted here. The US government, which enjoys the favour of savers both domestically and internationally, can

Box 3.2 Inflation and budget deficits in the USA: President Carter's economics compared with Reaganomics

The same relationship applies as in Box 3.1

(i) Inflation in the USA under President Carter

Budget deficit to income ratio	=	2%
Debt to income ratio	=	30%
Current account deficit to income ratio	=	−1%
Growth rate p.a.	=	3%

Using the same procedure as in Box 3.1, inflation is 7%

(ii) Inflation in the USA under Reagonomics

Budget deficit to income ratio	=	5%
Debt to income ratio	=	40%
Current account deficit to income ratio	=	3%
Growth rate	=	3%

Inflation is 2%

run a large deficit with much less risk to itself than Latin American governments distrusted by their internal and external creditors.

THE MONETARY DIMENSION

The discussion of inflation so far has been very much in fiscal terms. This has been possible because of the trick of steady-state analysis, that – with ratios constant – rates of change become the focus of attention. It is particularly helpful, in considering the relationship between fiscal policy and inflation, to be able to fix the debt to income ratio. In the real world the debt to income ratio is variable and, although much can be said about its determinants, it can take a wide range of values. The more normal approach, which emphasizes the money supply as the main influence on the rate of price increases, gains its cogency from the empirically observed stability of the demand for money. The ratio of the money supply to national income is not constant, but it more closely approximates to constancy than the debt to income ratio.

However, there is not necessarily any conflict between the fiscal and monetary approaches. It can be shown that – if certain conditions are met – changes in the size of the budget deficit should be accompanied by changes in the rate of monetary expansion and that these changes should be in the same direction. The nexus between fiscal and monetary policy is nevertheless different in developed and developing countries.

In developed countries the banking system is technically sophisticated, relatively free from government regulation and frequently used by the majority of the population. Most bank deposits are held not for transactions purposes, but as a form of saving, and interest-bearing deposits are much larger than non-interest-bearing. Although emphases differ between countries, there is an obvious case for basing policy decisions, at least in part, on the behaviour of broad money aggregates. In Britain this has been the practice for almost a decade, with analysis in the City and Whitehall focused on the credit counterparts identity:

$$\Delta M_b = B - \Delta D^* + \Delta L - N - X \tag{3.3}$$

Where M_b is broad money (sterling M3 in most British discussions), L is bank lending to the private sector, D^* is government debt held by the non-bank public, N is the change in non-deposit liabilities and X measures the impact of a variety of external transactions. N normally has little significance in the British context. (In West Germany it corresponds to the formation of 'monetary capital', such as the sale of bank bonds, and can be very large.) Since most developed countries do not rely on external finance over the long term, X also has no

systematic tendency to be positive or negative and can be ignored. Then we have more briefly

$$\Delta M_b = B - \Delta D^* + \Delta L$$

Let D^* and L be constant as proportions a_3 and c respectively of national income. So, after taking differences in D^* and L, and dividing throughout by Y,

$$\frac{\Delta M_b}{M_b}\frac{M_b}{Y} = \frac{B}{Y} - a_3\frac{\Delta Y}{Y} + c\frac{\Delta Y}{Y}$$

If in equilibrium the rate of money supply growth, $\Delta M_b/M$, equals the rate of growth of national income, $\Delta Y/Y$, it follows that

$$\frac{\Delta M_b}{M_b} = \frac{1}{M_b/Y + a_3 - c}\frac{B}{Y} \tag{3.4}$$

Equation 3.4 shows that the rate of money supply growth is a positive function of the budget deficit to income ratio if

$$\frac{M_b}{Y} + a_3 > c$$

This will always be true since the stock of broad money is higher than the outstanding bank advances total. It is also clear that, if three aspects of an economy's preferences (the money supply to income ratio, the debt to income ratio and the ratio of bank advances to income) are stable, an increase in the budget deficit to income ratio will be associated with an equiproportionate increase in the rate of growth of broad money. For a developed economy, with an advanced banking system and a high ratio of broad money to national income, there is no inconsistency between fiscal and monetary theories of inflation.

However, equation 3.4 is not particularly serviceable in the analysis of inflation in developing countries. As there is usually no meaningful market in government debt outside the banking system, the ratio of such debt to income, a_3, is low or negligible. Banks do, of course, lend to the private sector, but the backwardness of financial institutions – summed up in McKinnon's (1973) term 'financial repression' – prevents it being on a significant scale. As a result the ratio of bank lending to national income, c, is also low and can be quite volatile. Most bank deposits are held for transactions purposes, with narrow money (i.e. non-interest-bearing sight deposits) representing a high proportion of all money balances in the economy. In the poorest developing countries the financial system is so primitive that the central bank is both a major source of funds for the private sector and a dominant participant in the

intermediation process. Narrow money is a low and stable multiple of the central bank's liabilities. The analysis of inflation can therefore be pursued by examining the forces behind the growth of these liabilities.[8]

Once again we can state a credit counterparts identity, this time for high-powered money:

$$\Delta H = B - \Delta D^{*} - \Delta D^{**} + \Delta L_h + \Delta R \tag{3.5}$$

where H is high-powered money (assumed to account for all the central bank's liabilities), D^{**} is sales of government debt to the banking system, L_h is lending by the central bank to the private sector and R is the foreign exchange reserve. This can be rearranged in the same manner as the previous credit counterparts identity. Using the equilibrium property that the growth rate of high-powered money equals the growth rate of national income, we have

$$\frac{\Delta H}{H} = \frac{1}{H/Y + a_3 + a_4 - d - r} \frac{B}{Y} \tag{3.6}$$

as the steady-state relationship between the budget deficit to income ratio and the growth of high-powered money, where D^{*}, D^{**}, L_h and R are constant as proportions a_3, a_4, d and r respectively of national income. Like its broad money analogue for developed countries, the relationship suggests that fiscal and monetary approaches to inflation are compatible. This is in agreement with some empirical work (Edwards, 1983, pp. 477–85). The link between budget deficits and monetary conditions may nevertheless be less reliable in developing countries than developed because the relevant ratios (of high-powered money, government debt, bank lending and foreign exchange reserves to national income) are more likely to fluctuate than, for example, the ratio of the money supply to national income. Much depends, as always, on the government's creditworthiness. If the reserves have been exhausted and opportunities to lend to the private sector have vanished (i.e. d and r are nil), the inflationary impact of deficit financing is determined by the values of the ratios of high-powered money and government debt to national income. If there is no trust in government, these ratios will be low, particularly by comparison with the money supply to income and debt to income ratios in developed countries. The lower are the ratios, the higher the inflation rate generated by any particular budget deficit to income ratio. This conclusion is in accord with our previous discussion, including the contrast between contemporary Latin America and the USA.[9]

VIII CONCLUSION: THE CASE FOR SOUND FINANCE

The main conclusions of this paper can be summarized briefly. The scope for deficit financing is constrained by medium- and long-term inflation dangers. These dangers can be avoided if a country incurs a payments deficit on current account, but there is a consequent vulnerability to the withdrawal of external finance. Indeed, as the recent experience of Latin America shows, a reduction in capital inflows from abroad may lead not only to a deterioration in living standards, but also – in the absence of effective action to cut budget deficits – to accelerating inflation. It is not misleading to claim that, when a government runs an excessive budget deficit, the choice is between two evils – inflation and a payments deficit.

A large budget deficit is easier to accommodate in a nation where savers, both at home and abroad, have confidence in the government's ability to service debt. For a number of reasons savers' trust in government, which is reflected in the debt to income ratio, is generally greater in developed countries than in developing. It follows that the unwelcome choice between inflation and external imbalance confronts policy makers more immediately in developing countries than in developed. The good fortune of the American government, which has been able to reconcile a large budget deficit with declining inflation because of a high and rising debt to income ratio, could not be enjoyed by the government of any developing country. However, savers' confidence in the governments of developed countries is not preordained and certain. It can be jeopardized by persistent financial irresponsibility. If budget deficits are too large for too long, an increase in the debt to income ratio may cause bondholders' claims to become intolerable to taxpayers and this obliges governments to reduce the real value of the debt by inflation.[10] Memories of inflation then reduce savers' willingness to hold government debt in future. As we have already seen that a low debt to income ratio limits the room for manoeuvre in fiscal policy, the implications are clear. A responsible approach to budgetary decisions is essential to the achievement of stable prices. This is in part because – with no inflation – only a small nominal increase in debt each year is consistent with a given debt to income ratio. But it is also, and perhaps more fundamentally, because inflationary episodes erode saver trust and so lead to a permanent reduction in the debt to income ratio. This drawback to deficit financing applies to both developed and developing countries.

NOTES

1 This relationship and the later one between the budget deficit to income ratio and the growth rate of broad money were discussed by Congdon (1984a).
2 Collection costs, and their implications for tariff regimes, are also discussed by Corden (1974).
3 Congdon (1985, ch. 2) describes this and other features of financial repression in the Latin American context.
4 Monti and Siracusano (1980) describe some features of the Italian situation. Recent developments in Spain (a developed country) and Indonesia (a developing) show how unreliable the schema may sometimes be. In Spain banks have increasingly been subject to 'coeficientes', prescribed ratios of approved public sector investments to total assets, to the point where a senior executive has asked 'Am I a banker at all? I am not allowed to be one' (Burns, 1985). (In 1982 the coeficientes were 31.75 per cent of deposits; in 1985 they had reached 51.5 per cent.) In Indonesia, by contrast, exchange controls have been relaxed and guidance on asset allocation has been eased. In June 1983 the central bank 'abolished ceilings on credit expansion, allowing banks to lend according to availability of funds and their own portfolio decisions' (Sherwell, 1984).
5 See Eshag (1983) for an example.
6 St John-Stevas (1978, p 419). The quotation is from an article on 'The danger of lending to semi-civilised countries' in *The Economist* of 23rd November 1867.
7 The argument here amplifies that by the author (Congdon, 1984b).
8 Many economists believe that in all economies inflation is driven by changes in the stock of high-powered money. The author's view is that this approach is not fruitful in advanced economies where bank deposits are a very high and not particularly stable multiple of high-powered money, and the most important feature of the money supply process is the effect of the extension of bank credit on broad money. See Congdon (1981a; 1981b) for a development of the argument that an integral part of technical progress in the financial system is the attempt to economize on the use of high-powered money. As a general rule, the ratios of high-powered money to national income are higher in developing countries than developed, whereas the ratios of broad money to national income are lower.
9 Or, indeed, the contrast between contemporary Argentina and Italy. In Argentina the ratio of government debt to national income is down to 3 or 4 per cent, but a budget deficit which is lower than Italy's as a share of national income can set in motion an inflation rate of almost 1,000 per cent. Italy is protected by its citizens' willingness to hold a government debt similar in size to national income. On the need for balanced budgets in Latin America, see Congdon (1985, 46–53). It should be mentioned that there is still an apparent conflict between the fiscal and monetary approaches to the determination of the inflation rate. In the fiscal section, $dn/db = 1/a$ where $n = \Delta Y/Y$. In the monetary section,

$$\frac{dn}{db} = \frac{1}{M/Y + a_3 - c}$$

This looks a bit odd. Actually, it is coherent. If we remember that M/Y is not very different from c in most developed economies and that government debt includes debt held by the banks and overseas as well as debt held by the domestic non-bank public (i.e. a is not equal to a_3), the difference between the two answers becomes less puzzling. (Note that, if $M/Y - c = a_4$, where a_4 is the banks' holdings of government debt, $M/Y + a_3 - c = a_4 + a_3 = a_1$.)

10 See Moggridge and Johnson (1972) 'An open letter to the French minister of finance (whoever he is or may be)', pp. 76–82, for Keynes' views on a problem of this kind in France in the 1920s. In Sargent and Wallace (1984), the constraint on the debt to income ratio is imposed by savings behaviour.

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