

Economic Objectives, Public-Sector Deficits and Macroeconomic Stability in Zimbabwe

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Carolyn Jenkins is a research officer at the Centre for the Study of African Economies, University of Oxford. This study is part of a larger project on post-independence policies in Zimbabwe, which also includes issues of macroeconomic stability, and the microeconomic impacts of policies designed to alleviate rural poverty, with a view to drawing lessons for future policy-making in South Africa.

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Abstract: A fundamental macroeconomic problem in Zimbabwe is that the sum of public-sector projects is greater than the resources available to finance them. The government's difficulty in discerning the macroeconomic limitations on new initiatives was greatly increased by the unusual circumstances of the first two years: a commodity boom; promises of more aid than eventually arrived; expectations of a peace dividend which did not come; initial high rates of economic growth; and initial low foreign debt. All of these circumstances created unrealistic expectations, concealing the probability that the government's plans would be impossible to finance. The government was slow to react to expectations being disappointed. This created a debt problem. Drought and terms of trade shocks make things worse. No allowance is made for the likelihood of these shocks. The government is unwilling (or politically unable) to engage in fiscal adjustment, so the burden of adjustment is pushed on to the monetary authorities. Forced saving by the private sector enables greater domestic borrowing by the government, but this reduces private consumption. Uncertainty caused by the growing public-sector debt reduces private investment. The result is a further reduction in the growth rate. A macroeconomic model shows that the variable with greatest influence on overall growth is agricultural output. However, the budget deficit has an unambiguously negative impact on exports. It also reduces private welfare and worsens the distribution of income between high- and low-income earners by reducing private consumption and investment and therefore employment. In other words, some of the policies implemented after independence and aimed at redistributing resources or alleviating poverty have been unsuccessful, or have perverse effects, creating distortions which push the economy towards macroeconomic instability. In Zimbabwe the growth of government has become a drain on the economy, rather than a facilitator of economic growth and development.

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1. Introduction

Government interventions to redistribute income and to improve living standards are part of a policy package, the components of which will be interdependent but not necessarily consistently integrated. Efforts to alleviate poverty in rural areas, to redistribute income, to promote agricultural development or to create jobs will be constrained by other macroeconomic and sectoral policies, and will, in turn, affect the outcomes of those policies. Furthermore, the outcomes of policies will be modified by exogenous shocks, which may themselves require action by the government to reduce their impact.

This paper is concerned primarily with fiscal policy. Other papers have concluded that the fiscal stance undermined many of the government's development initiatives. The central economic problem facing Zimbabwe is the size of the fiscal deficit and mounting public-sector debt. Monetary policy bears the burden of adjustment, and is concerned essentially with financing the deficit in a non-inflationary way. Domestic dissaving necessitates external adjustment, achieved in the 1980s by direct controls on foreign-exchange allocations and in the 1990s by large devaluations of the Zimbabwe dollar and by monetary compression. The public-sector deficit remains the primary cause of economic imbalance, undermining attempts at adjustment both without the support of the international financial institutions in the 1980s and with more foreign aid under the Economic Structural Adjustment Programme (ESAP) in the 1990s.

The questions to be answered in this paper are:

1. Why did the government consistently spend in excess of its means while, at the same time, acknowledging the need for and promising fiscal discipline?
2. Which policy variables were most responsible for the deterioration in the fiscal position?
3. How did these policy variables affect the relative size of the budget deficit, given external factors which exacerbated the internal imbalance?
4. How did the deficit affect observed outcomes? What has been the effect of the large, permanent fiscal deficit on the economy in general and on the poor more specifically?
5. What would have been the result for the real economy of greater fiscal discipline?

In the following section (Section 2) the government's macroeconomic policy intentions are recorded. Section 3 considers the context of post-independence macroeconomic policies, in order to understand how it was that severe debt problems were allowed to develop so rapidly. Thereafter the structure and financing of public-sector expenditure is discussed, in order to assess which policy variables had most influence on the size of fiscal deficits (Section 4). Section 5 describes briefly the observed macroeconomic outcomes. The general equilibrium effects of external and fiscal-policy variables are then analysed using a real-effects computable general equilibrium model (Sections 6 and 7). Section 8 concludes, discussing the issue of public-sector deficits, economic objectives and macroeconomic stability.

2. Zimbabwe's economic policy plans

The new government was aware of the importance of fiscal discipline. In its first economic policy statement [Republic of Zimbabwe, 1981:14, 15], a commitment to 'fiscal soundness' was affirmed. The reason given was that it was important to 'preserve creditworthiness'. In the *Transitional National Development Plan (TNDP)*, in which the target rate of real economic growth was 8 per cent per year, the government promised that the rate of growth of net current expenditure 'will be substantially reduced from that experienced in the recent past, when it considerably exceeded the nominal rate of increase of GDP. It will not exceed 7 percent *per annum* in real terms, or one percent [one percentage point] below that of GDP' [Republic of Zimbabwe, 1982a:34].

The target rate of economic growth was described as 'planned', not projected. It was believed that this was possible based on 'past performance, current potential and good policies' [Republic of Zimbabwe, 1982a:29], and that it could be achieved if both government and people were 'committed' to economic growth. The assumptions on which the plan was based included a large public-sector investment initiative and expectations of substantial inflows of aid, promised at the Zimbabwe Conference on Reconstruction and Development (ZIMCORD) held in 1981. There was no analysis in the *TNDP* of necessary modifications if 8 per cent real annual growth were not attained, and no allowance was made for the effects of adverse shocks. For example, instead of preparing for drought, the Plan simply claimed that there was 'potentially sufficient water for all purposes' [p. 61].

Volume 1 of the *TNDP* set out detailed objectives for each sector of the economy, including universal free primary education and more secondary schools, more free health care 'within the constraints of the budget' and the provision of better transport, infrastructure and agricultural services to the rural areas. The budget, described as 'the most important instrument for translating and implementing the programmes of the plan', was to be integrated with annual development plans. Volume 2 laid out in greater detail the programmes and projects, allotting to each government department its aggregate allocation of Public Sector Investment Programme (PSIP) resources.

The costing exercise was somewhat illusory, as requirements exceeded resources, and no guidelines were given as to how projects would be prioritised. ZIMCORD funds were supposed to finance 29 per cent of the PSIP [1982a:39], providing 61 per cent of the central government financing requirement [p. 43]; and to help finance post-war reconstruction, technical assistance and private-sector projects [p. 41]. The Plan also stated that it was relying for finance on increased domestic saving, especially from the public sector, on foreign capital inflows and on economic growth. Projections were made of central government revenue and current expenditure, with revenue exceeding current spending [p. 42]; local government spending was expected to exceed revenue, and the cumulative excess was to be financed by domestic borrowing.

The disparity between resources and requirements was repeated in Volume 1 of the *First Five-Year National Development Plan* [1986a]. The problem was acknowledged in Volume 2 of the *FFYNDP*, and a warning given that possible major changes would be made to the investment programme during the plan period [Republic of Zimbabwe, 1988:iii]. The Plans were therefore no guide to actual government spending. The interesting features of the *FFYNDP* were the institutionalisation of the Public Works Programme, making it a permanent feature of rural

development [p. 14], and the expression of the intention to increase government control and ownership of firms in the intermediate and capital goods manufacturing sectors [p. 17].¹

Although a second national development plan was anticipated, it was superseded by the ESAP, initiated at the end of 1990. The provisions of the government's *Framework for Economic Reform (FER)* [1991] and the later World Bank *Policy Framework Paper* [1992] included trade liberalisation, devaluation, domestic deregulation, financial-sector liberalisation and a reduction in the fiscal deficit.² During the first phase, lasting five years, progress was made on many of these objectives.

Trade liberalisation involved, amongst other initiatives, the progressive transfer of imports to the Open General Import Licence, tariff adjustment and the retention by exporters of a progressively increasing proportion of foreign exchange for free importation of goods. The Zimbabwe dollar depreciated 35 per cent in real terms during the first nine months of 1991; thereafter periods of overvaluation have occurred followed by sharp corrections. Domestic deregulation involved the phasing out of price controls, liberalisation of the marketing of crops, a relaxation of regulations which inhibited informal sector activities, the expediting of investment approvals, and more flexible retrenchment and wage-setting procedures. Financial-sector liberalisation resulted in a sharp rise in nominal and real interest rates.³

The government agreed to reduce its budget deficit by two percentage points annually from 10 per cent of GDP to a target of 5 per cent of GDP by 1994/95. The deficit was to be reduced by a combination of additional revenue measures (including increased cost recovery and improved efficiency of collection), the postponement of capital spending, wage restraint, retrenchment and cuts in subsidies to parastatals. In order to protect the poor, spending on education, health, social services and infrastructure (some of these large departmental votes) were protected from expenditure cuts. Tax rates were lowered, rather than raised, because it was believed that the tax ratio of 34 per cent was too high. Progressive tariff reduction also reduced tax revenue. It is not clear where additional resources were to be found except by (foreign) borrowing, which was expected to increase substantially. Non-compliance with fiscal conditions delayed agreement on ESAP II. When agreement was reached in September 1996, fiscal adjustment and parastatal reform were central to donor conditionality.

¹ Pages 18–21 of the Plan list potential projects and feasibility studies, and their approximate costs, although there is no indication of which will be implemented. The projects include government support for the development of a 'national tractor' and for local production of a 'national car' [p. 22]. There are also mining projects, housing programmes, electrification schemes, and support for small-scale enterprises in rural areas.

² At the insistence of the World Bank, the reform efforts were accompanied by initiatives to shield poor and vulnerable groups. These included the exemption from primary school fees of families living in the communal lands and a raising of the threshold for free medical care.

³ This should be seen as part of an attempt by the Reserve Bank of Zimbabwe to restore macroeconomic compatibility in the face of the worsening fiscal position rather than as a measure directed towards improving the mobilisation of savings [Adam and Ncube, 1994].

3. The context of policy-making after independence

The question to be answered in this section is: why did the government continue to spend in excess of its means while, at the same time, promising fiscal discipline? The government won the 1980 election with promises of land, free education, free health, higher wages and jobs [EIU, 1980(2)]. There is no doubt that a significant redistribution of income and wealth was required, and that the needs of the previously disenfranchised majority, for access to social services, to jobs and to assets were considerable [see Stoneman (ed.), 1981]. It is not clear, however, how much political pressure the government was under to provide these things. Observers at the time did not appear to fear repercussions of unrealised expectations on the part of the electorate, as has been expressed so frequently in the case of South Africa. It is unlikely that there would have been a significant political cost to the slower expansion of public services within the limitations of the public-sector budget constraint. However, the deficiencies of populist policies were not as evident in 1980 as they are now. Moreover, the Cold War was still in progress, and the third-world debt crisis was yet to come. Consequently, there were fewer pressures on African governments to be financially conservative. The new government set about delivering some of its election promises, particularly the provision of social services. Improved access to education and health is considered one of the most important achievements of the post-independence period, but it required more resources than the government had to spend.

A large dividend was expected from the ending of the civil war and of sanctions, not only in terms of fiscal savings but also in terms of a 'recovery' surge in output and access to foreign resources. These expectations appeared to be borne out as GDP grew strongly in 1980 and 1981, helped by a commodity price boom and a bumper agricultural harvest. The economic plans drawn up in the early 1980s were predicated on these high rates of growth, and in anticipation of large inflows of foreign aid. The economic context in which policy decisions were made in 1980 and 1981 was therefore particularly important in influencing the direction taken. The government's short-term perspective meant that it did not anticipate that high levels of spending would be unsustainable.

This section deals in turn with each of these expectations of a relaxation of financial constraints: the effects of the transition from civil war, of external shocks and of promises of aid.

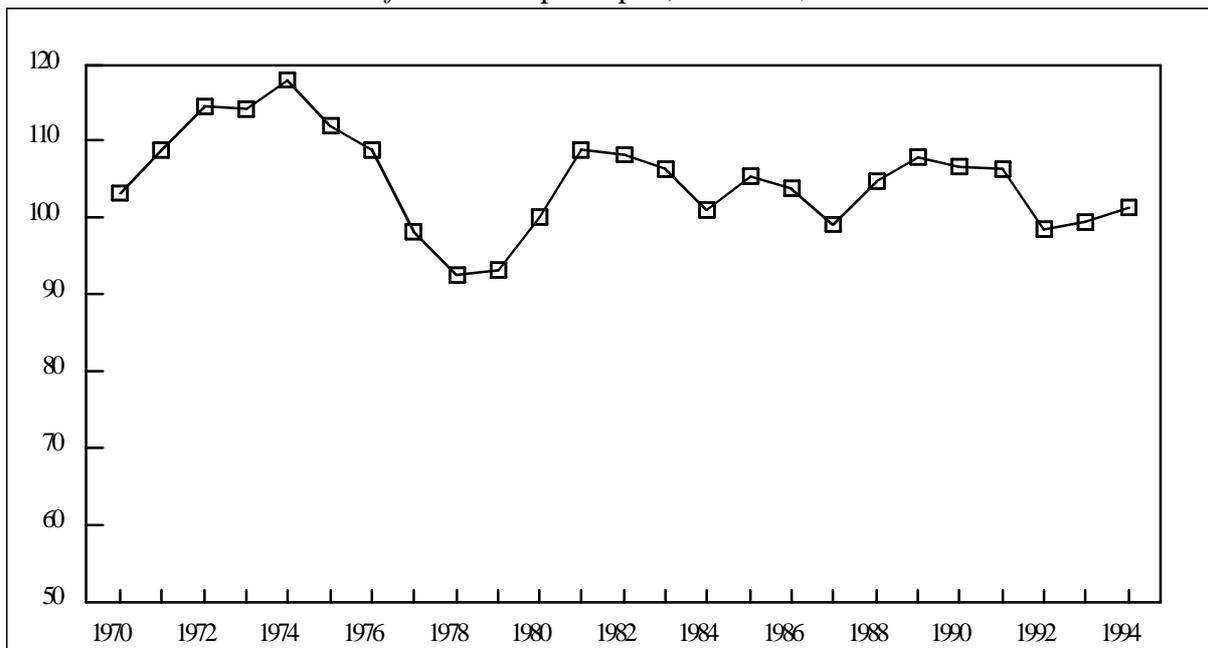
3.1 Expectations of a dividend from the cessation of civil war

Prior to independence in 1980, there was a decade of civil war in Zimbabwe, although this intensified only in the middle of the 1970s. In other cases of civil war in Africa, output falls during the conflict. Frequently the fighting continues for an extended period of time and spreads to urban areas. Consequently much of the capital stock is destroyed. The ending of the war and of the destruction of the capital stock is usually *not* followed by a large early gain in output; the pattern is a modest and once-off increase in output, and then stagnation until confidence recovers [Collier, 1995:1].

In Zimbabwe output fell during the height of the war (1975–1978). However, unlike other African civil wars, the conflict was not prolonged, nor did it spread to urban areas. Although investment fell sharply, very little of the existing capital stock was destroyed. There was a surge in output following the 1979 political settlement, with high real rates of growth – of 12 per cent *per annum* – in 1980 and 1981. Thereafter growth was more modest, averaging 3 per cent annually. Nevertheless, pre-war output levels were not regained: by the end of the first decade after

independence, *per capita* GDP was roughly what it had been in 1981, and still lower than in 1974, before the war intensified (Figure 1).⁴ The pattern is therefore only weakly similar to that of other African post-war recoveries, probably because (i) the war was comparatively short; (ii) there was comparatively little damage to physical capital; and (iii) the Zimbabwean economy was more developed and diversified.

Figure 1
Index of real GDP per capita, 980=100, 1970–94



Unlike other African cases there was little change in the *structure* of the economy either before or after the war. Usually civil war makes both transactions and assets more vulnerable; the structure of the economy changes, and those sectors which rely on transactions and assets, like manufacturing, construction and services, decline relative to subsistence agriculture [Collier, 1995:2]. When peace returns, resources shift gradually towards war-vulnerable sectors.

In Zimbabwe the war was fought in rural areas, damaging peasant agriculture. Agricultural infrastructure was neglected,⁵ and the share of commercial agriculture in GDP also declined (as it turned out, permanently) from 17 per cent in 1974 to around 12 per cent in 1980 (Table 1), displaced by ‘other’ activities, mainly mining. By contrast, manufacturing, which relies on assets, effectively maintained its share in GDP, while services, which rely on transactions, contributed relatively *more* to GDP from 1974 to 1978. Both sectors grew strongly after a political settlement

⁴ The combined effect of drought and ESAP has caused real GDP per head to fall since 1990.

⁵ Its repair or replacement was one of the first priorities of the new government after independence [EIU, 1980(3)].

was reached.⁶ There appears to have been little restructuring of the economy after the war, with sectoral shares remaining fairly constant, a feature which is somewhat different from other African cases. This is probably because the formal economy, with the exception of commercial farming (especially in the north-east), was protected from major disruption to transactions or destruction of capital, including infrastructure. It was, however, affected by the regular drafting of skilled personnel into military service, which ended when a settlement was reached. The implication is that post-war recovery was possible without huge investment in reconstruction, but similarly it was unlikely that the economy would shift to a path of markedly higher growth.

Table 1
Indices of real value added by sector (1980=100), and sectoral shares in GDP,
selected years 1974–93

	1974	1976	1978	1980	1982	1984	1986	1988	1990	1992	1993
Agriculture	108	114	98	100	106	110	128	131	122	95	141
Manufacturing	92	86	78	100	109	101	116	124	140	130	119
Services	89	90	88	100	119	117	126	127	138	143	146
GDP	98	97	87	100	115	115	126	130	140	144	156
Agric/GDP	16.9	16.2	12.2	13.1	12.9	11.7	13.5	12.6	10.7	8.6	12.3
Manuf/GDP	22.6	22.2	21.8	23.3	21.6	23.0	22.0	21.2	21.9	21.0	18.5
Services/GDP	42.7	43.3	49.5	44.3	45.9	43.1	42.9	44.1	44.0	47.2	46.2
Other*	17.8	18.3	16.5	19.3	22.2	21.6	22.1	24.3	23.2	24.0	

Notes: * Mainly mining
1983 was a year of drought

Source: calculated from World Bank data

The ending of civil war has other effects: changing the structure of government budgets; and affecting the choices of assets held by private agents [Collier and Gunning, 1995:233–236]. These effects were anticipated in Zimbabwe, but, in the event, were not particularly marked. They are dealt with briefly below.

It was expected that Zimbabwe would have a large fiscal peace dividend in the form of reduced spending on defence: the war was estimated to have cost R\$1 million per day (US\$1.6 million) [EIU, 1980(1)]. In other African countries which have suffered civil war, there has typically been no substantial peace dividend: government revenue has been slow to recover, while military spending has not easily been reduced [Bevan and Pradhan, 1994:93–94]. After the war in Zimbabwe current revenue *did* grow, at an average real annual rate of 20 per cent for three years, having fallen in real terms during the last two years of the conflict. At the same time, however, defence spending rose almost 50 per cent in real terms in 1980, despite the ceasefire of 28 December 1979. Military spending declined a little as a proportion of total government spending (Table 2): from 21 per cent in 1979 to around 17 per cent at the end of the 1980s.⁷ However,

⁶ The growth in services includes the rapid expansion of the public sector.

⁷ A real cut in defence spending was effected in the 1980/81 budget (taking effect in 1981, after the 1980 peak), but this was temporary, lasting only until 1985, and even then it was about 20 per cent above 1979 levels.

there were real increases in defence spending, and the falling relative expenditure is wholly accounted for by even faster growth in public expenditure in other areas. The reasons for escalating military expenditures were the high costs of unifying the two previously opposed armies; the use of the army in quelling unrest in Matabeleland in 1982–85; and the need to maintain a military presence in the Beira Corridor to protect the railway and the oil pipeline from Mozambican guerrillas. There was, consequently, no peace dividend in Zimbabwe, and the ending of the civil war had little effect on the size or structure of the government budget.

Table 2
*Defence spending as a proportion of total government expenditure and
 real defence spending 1979=100; selected years 1976-89*

defence exp.	1976	1977	1978	1979	1980	1981	1982	1983	1985	1987	1989
% of total	16.1	20.1	19.3	21.1	25.0	20.1	17.3	18.3	15.5	17.1	16.5
1979=100	65	95	96	100	147	115	123	121	122	163	157

Source: calculated from World Bank data

Because investment is risky during civil war, savings tend to be shifted into liquid assets, a process which is reversed once peace and confidence return [Collier and Gunning, 1995:234–236]. Frequently private agents increase their holdings of foreign currencies, or, if the domestic currency is a reasonable store of value, of money. In Zimbabwe there were tight controls on acquiring foreign currency, both before and during the civil war, although a conservative estimate of capital flight put it at US\$2,500 million between 1965 and 1980 [Cowitt, 1991:216]. There was some increase in the ratios of M2 to GDP and of excess⁸ to total liquid assets in the banking system during the latter half of the 1970s, indicating that savings *were* being held as liquid assets (Table 3). As in other post-war situations, some private agents were therefore financially liquid after the war, particularly the minority white and Asian communities, which had maintained their real incomes. As the economy had been short of investment for some years, the private returns to investment were likely to be high, but the (expected) surge that occurred in private fixed capital formation lasted only two years. Thereafter private investment fell steadily as a proportion of GDP, indicating that those who could afford to invest had insufficient confidence to invest in new capital projects. The proportion of excess liquid assets in the banking system did not, however, increase, because government domestic borrowing escalated – until the Economic Structural Adjustment Programme was underway in the early 1990s.

⁸ Prescribed liquid assets are a statutory proportion of liabilities to the public held by financial institutions. Excess liquid assets are defined as the difference between liquid assets held and prescribed liquid assets. In other words, financial institutions have sufficient reserves of liquid assets to increase their lending if the demand for credit for viable projects is forthcoming.

Table 3

The ratios of M2 to GDP (1), and of excess to total liquid assets in the banking system(2), 1975-1994

	1975	1976	1978	1980	1981	1983	1985	1987	1989	1991	1993	1994
(1)	23.2	25.1	27.8	29.5	25.6	23.4	24.9	25.7	25.8	24.1	29.2	30.7
(2)	39.2	37.4	43.1	29.5	19.1	20.3	16.5	15.2	14.8	21.1	53.7	73.1

Source: calculated from RBZ data.

Note: GDP figures used in the calculation are at factor cost; GDP at market prices is available only up to 1991.

The conclusion of this section is that the war did not have long-term implications for Zimbabwe's macroeconomy, although there were short-run effects of falling investment and output.⁹ The ending of the war did not therefore lead to significantly large restructuring of the economy, of private asset portfolios, or of the government's budget. At independence there was an immediate adjustment as income and investment grew rapidly, but this was short-lived. Unfortunately the surge in revenue, output and investment which accompanied the end of the war gave the new government the impression that high levels of spending could be maintained. The post-war recovery was exaggerated by positive external shocks which occurred in 1980 and 1981.

3.2 External shocks

Zimbabwe is a primary commodity exporter, and is vulnerable to changes in world commodity prices and to drought.

Immediately after independence Zimbabwe benefited from a sharp increase in the prices of major exports. During 1980 the average price of gold was double that of 1979. The commodity price boom, though perhaps most spectacular in gold, affected every one of Zimbabwe's main commodity exports, agricultural as well as mineral (Table 4). The price increases occurred as sanctions against Zimbabwe were removed.¹⁰ The boom in the world sugar price coincided with Zimbabwe's negotiating a 25,000-ton sugar quota under the Lomé convention [EIU, 1980(4)]. The sharpest increase in tobacco prices occurred a year later, in 1981, with certain types of tobacco doubling in value [EIU, 1981(2)]. The real value of exports rose 22 per cent in 1980.

⁹ This was also, in part, caused by the oil price shocks of 1974 and 1979, the second of which was a contributing factor to the agreement of the minority government in Rhodesia to negotiations, particularly when the South African government refused to continue sanctions-busting activities for Rhodesia.

¹⁰ Ferrochrome, for example, had been severely harmed by sanctions [EIU, 1980(2)].

Table 4
Commodity price indices and the terms of trade, 1980=100, selected years 1977–90

	1977	1979	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
gold	24.3	50.5	75.6	61.8	69.5	59.3	52.2	60.5	73.5	71.9	62.7	63.1
nickel	79.8	91.7	91.3	74.2	71.7	72.9	75.2	59.7	74.7	211.4	204.2	136.0
copper	60.1	90.4	79.8	67.7	72.7	63.1	64.7	62.6	81.8	119.1	130.3	122.2
tobac.	80.4	94.7	113.0	128.4	130.2	130.5	129.8	115.1	110.2	112.3	120.7	122.8
maize	65.7	84.9	92.0	79.1	85.6	84.4	63.0	54.3	57.2	77.1	83.2	81.0
sugar	63.6	86.4	86.4	81.8	79.6	72.7	72.7	86.4	97.7	109.1	104.6	120.5
cotton	75.5	81.9	89.4	77.1	89.4	86.2	63.8	51.1	79.8	67.6	80.9	87.8
(petrol.	36.2	82.4	96.2	88.4	80.0	79.6	76.0	39.0	50.1	39.9	48.5	62.0)
ToT	102.8	80.9	111.2	108.3	104.2	120.6	123.4	120.2	106.0	n.a.	n.a.	n.a.

Note: asbestos and ferro-alloys prices not available; ToT are for aggregate imports and exports

Source: calculated from data in IMF [1994]; ToT reported in RBZ

The duration of commodity price shocks is difficult to predict, particularly for minerals, and initially the rate of savings out of windfalls tends to be high, whether of private agents or the government [Collier and Gunning, 1994:6,7,11]. However, spending also rises, and, when the boom is over, private agents decrease their spending, while governments typically do not. A study of 35 African countries showed that, during a positive commodity-price shock, government spending rose. When the higher windfall income ceased, and after all other components of expenditure had adjusted downwards, the higher public-sector spending persisted [Deaton, 1992]. In Africa, government dissaving has, in most cases, considerably outlasted a commodity-price boom.

In Zimbabwe this pattern was repeated, except that the central government saving rate did not turn positive during the commodity-price boom of 1980, although it did improve (Table 5). Private saving as a percentage of GDP rose substantially in 1980, but fell as the consumption boom continued in 1981 and most export commodity prices dropped sharply. The drought of 1982-83 increased food prices, and the private propensity to save continued to decline until the end of 1983.

Table 5
Private and public saving as a percentage of GDP, 1978–1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Private	16.1	13.3	19.7	12.7	12.0	5.1	17.7	21.8	21.1	19.6	26.7
Central govt	-6.7	-7.0	-7.4	-1.4	-3.0	0.4	-3.8	-4.7	-3.7	-1.0	-0.5

Source: calculated from World Bank data.

Saving out of windfalls may be used to acquire foreign financial assets. This has the advantage of enabling the boom to be stretched, if these are subsequently repatriated [Collier and Gunning, 1994:13]. Where private agents cannot legally acquire foreign assets during a windfall, they tend to invest in non-tradable capital goods, generating a construction boom, or in imported capital goods. The former course tends to increase domestic unit costs; the latter may generate balance-

of-payments difficulties. There is evidence of both a construction boom and rapid import growth in Zimbabwe. There was no marked increase in foreign assets.

The mineral boom was a major opportunity for investment, which had been suppressed during the war and sanctions, and gross domestic investment grew strongly in 1980 and 1981. Exchange controls prevented private agents from acquiring foreign assets, but a construction boom commenced in 1980 as private agents shifted from liquid assets to fixed investment. Building plans doubled, especially for industrial and commercial buildings, and the real value of building work of the private sector increased sharply (Table 6). Real growth rates of public-sector construction are erratic, although, if civil engineering (infrastructural) construction is excluded, the high rate of growth of public-sector building activity appears to have commenced with a lag of two years and continued until the end of 1987. Although the government could have prolonged the investment boom by acquiring foreign assets, it actually increased its borrowing from abroad, that is, its foreign liabilities.

Table 6
Real growth rates of construction by public and private sectors, 1978–88

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Pvt constructn	-20.0	6.7	10.2	34.3	6.6	-17.1	-10.7	-18.8	-10.2	-1.2	-20.9
Pub.sect. constr.	-16.5	-8.8	3.8	10.8	-15.0	2.0	19.5	-0.3	1.3	-7.2	-40.0
Pub.sect. build*	-30.0	4.1	-10.0	0.2	6.2	12.3	12.6	15.4	23.5	15.4	-37.5

* Public sector construction excluding civil engineering work.
Source: calculated from RBZ data.

A massive increase in consumption was also recorded in 1980-81, and imports (of both consumption and capital goods) grew even faster than exports: a real increase of 35 per cent in 1980, generating a current-account deficit, which was financed by government borrowing from abroad. There is evidence of some Dutch disease effects, which is supported by the appreciation of the real effective exchange rate from 1980–1982 [see Muzulu, 1993:130]. A rise in domestic unit costs was prevented by price controls.

Most problematic was the fact that the commodity price increases were not sustained. It is clear from Table 5 that only tobacco prices did not fall after 1980. Prices boomed again in 1988, especially of nickel. Unfortunately the high export prices occurred in precisely the year that the government was drawing up its ambitious plans for economic growth and redistribution, and no allowance was made for the possibility, indeed probability, that they would be temporary. By the third quarter of 1982, low mineral prices were reported simultaneously with a drought. Economic growth slowed dramatically, primarily as a result of falling agricultural production, and gross domestic investment contracted. There was no adjustment in government recurrent spending.

The drought of 1982–83 was followed by another in 1987, when the contribution of agriculture to GDP was negative. A recent study on the macroeconomics of drought in Zimbabwe [Benson, 1994] concludes that the economy was more vulnerable to drought shocks in the 1980s than in previous decades, because of a general deterioration in climatic conditions. There are strong forward and backward linkages between agriculture and other sectors. Consequently, the effects of drought are not contained within the agricultural sector, but are felt in all sectors. This is

exacerbated by the country's dependence on hydro-electric power, and power cuts are frequent during water shortages. Recovery from drought is actually quicker in the agricultural sector than in other sectors, the lags in manufacturing being longest.

Drought directly increases government spending, as both the government and donors are involved in preventing widespread hunger and population movements during the droughts. Although the government's drought relief programmes have generally been considered a success, they have added to the already high levels of government recurrent spending, as it has not been possible to make compensating reductions elsewhere. These programmes have also added to the public-sector debt burden, as the government has chosen to finance a large proportion of its drought relief efforts by borrowing rather than by taxation.

Just as the commodity-price boom coincided with the end of the war (and a particularly good harvest), so the droughts of the mid-1980s occurred during world recession when commodity export prices were weak. This meant that the effects of the drought on income could not be offset by increasing mineral export earnings.

The conclusion of this sub-section is that both positive and negative external shocks exacerbated the government's already high propensity to spend during the 1980s. The export price boom, which coincided with independence, made it appear that huge increases in spending by the government could be paid for. Of course they could in a short-term sense, but this was not sustainable.¹¹ The government continued to spend without revising its plans in the aftermath of the boom, borrowing to finance its dissaving. Thereafter additional spending needs were created by two serious droughts, which added to the fiscal burden at the time that the world economy entered a recession.

3.3 Expectations of aid

The government had illusions not only about export prices and about the beneficial effects of the ending of the war and sanctions. Early aid inflows also turned out to be very disappointing: a combination of wild half-promises made before the peace was agreed and slow bureaucratic procedures. In 1976, for example, Kissinger had promised US\$1 billion on a resolution of Rhodesia's problems; in 1980 the official US promise was only US\$25 million. The aid was needed to achieve redistribution without adverse effects on growth. The government appeared to have persuaded the international community of this need at ZIMCORD early in 1981, when 45 donor countries and organisations were reminded of their Lancaster House pledges, and Z\$1.3 billion (US\$1.9 billion) was pledged.¹² The largest single donor was the World Bank, which offered Z\$287.5 million in soft loans, followed by the US and EEC. As it turned out, very little of these funds was ever received.

The government's expenditure plans exceeded even the promises it had been given: the three-year transitional development plan, published in 1981, required an estimated Z\$3.7 billion (US\$ 5.2 billion) of foreign capital. The expectations of large aid inflows encouraged the government to borrow in anticipation of receiving support in the future. When aid was not forthcoming in the

¹¹ This is strongly reminiscent of the post-independence spending histories of Ghana and Zambia.

¹² Of this between 10 and 30 per cent was tied, depending on the donor.

volumes hoped for, the government continued to borrow, on both domestic and foreign capital markets, at commercial rates, rather than adjust its spending. By the first quarter of 1983, it was evident that the debt position had become precarious. In the following quarter the IMF agreed to provide a standby facility of SDR356 million. The government promised to 'work on' cuts in public spending [EIU, 1983(2)]. However, the 1984/85 budget deficit exceeded IMF limits, and by the end of the year the programme broke down. Zimbabwe implemented its own programme of adjustment, servicing its debt without balance-of-payments support until 1990.

Internal pressures for liberalisation, from both the private sector and 'technocrats' within government, emerged in 1987, and Zimbabwe adopted a donor-sponsored structural adjustment programme at the end of 1990. Initially the authorities had a degree of autonomy in determining the pace of adjustment under ESAP. Some aspects of reform – trade, price, foreign-exchange and financial-sector liberalisation – were carried out swiftly, but little progress was made on tax and public expenditure reform. The government regarded its partial compliance with conditionality as creating an entitlement to aid, and the severe drought of 1991-92 provided some justification for its reluctance to cut expenditure. In effect, aid provided under the first phase of ESAP simply allowed high public-sector spending to continue while simultaneously increasing foreign debt. Recent figures show that Zimbabwe's foreign debt rose from 45 per cent of GDP in 1990 to 75 per cent in 1994, falling to 67 per cent of GDP at the end of 1995. Approximately 95 per cent of this is government debt (including the parastatals). The increased aid sought and received during the 1992 drought only worsened Zimbabwe's external debt position, increasing its dependence on the IMF for balance-of-payments support.

Greater aid-dependence marked a turning point in the aid relationship. When there was no progress with reducing the size of the budget deficit after the agricultural sector recovery in 1993-94, the IMF began to apply pressure for compliance, suspending aid support until targets were met. The government had clearly miscalculated the extent of its autonomy in implementing domestic policy, and had overestimated the extent of slippage that would be tolerated by the international financial institutions. ESAP II, agreed in September 1996, has stringent fiscal targets, which Zimbabwe faces from a position of a larger foreign debt and little room for fiscal manoeuvre. Moreover, the country is vulnerable to external shocks which may again force it further to raise its external borrowing.

4. Trends in central government revenue and expenditure

The first budget of the new Minister of Finance, Enos Nkala, was consistent with the intentions of the *TNDP*. Real spending was budgeted to increase by only 4 per cent in 1980/81. Although security expenditure remained the largest item of spending, it was cut in real terms, and the largest real increases, of 54 per cent, occurred in the allocations for education and health. On the revenue side, income tax rates were increased, as was excise tax on beer and spirits; sales tax was extended to hotels and air travel; and there was no tax relief on the export of capital by emigrants [EIU, 1980(3)]. Certainly at the end of calendar year 1981, the first full year of fiscal activity by the new government, the deficit of the central government had been reduced to 6 per cent of

GDP: a result of strong real growth in current revenue in 1980 and 1981, and of a real reduction in defence expenditure.¹³

Since 1981 the government has found it impossible to reduce the deficit ratio further; instead the deficit reached 14 per cent of GDP in 1994/95 [Republic of Zimbabwe, 1995]. Total government spending grew from 31 per cent of GDP immediately before independence to around 40 per cent of GDP by the end of the 1980s (Table 7). Of this total, capital expenditures accounted for a comparatively consistent 10 per cent (around 3.5 per cent of GDP). Revenue (excluding grants) also grew strongly – from 25 to around 32 per cent of GDP – but was insufficient to cover recurrent spending, which averaged 34 per cent of GDP from 1980 to 1990.

Table 7
Government revenue, spending and the deficit as ratios of GDP, 1976–1991

	1976-1979	1980-1983	1984-1987	1988-1991
Revenue/GDP	24.2	27.9	32.1	32.2
– Tax revenue/GDP	20.1	24.4	28.8	28.8
Expenditure/GDP	30.8	34.3	40.1	37.4
– Current exp/GDP	28.6	32.0	37.2	33.5
Deficit/GDP	-7.9	-8.6	-9.3	-7.9
Source: calculated from World Bank data				
Note: published data which are consistent across time are available only from 1976 to 1991				

A summary of central government revenue and expenditure (Table 8) and of the real growth rates of the main categories of revenue and expenditure (Table 9) clarifies the source of the persistent central government deficit. It should be noted that the figures up to 1984 are for calendar years, even though the budget is announced at mid-year. From 1985 onwards data are reported for fiscal years ending 30 June. Also from 1985, extra-budgetary operations are included. Because of these changes, 1985 growth rates in Table 9 are not informative.

4.1 Trends in government expenditure

Since independence, the items of government spending which have absorbed most resources have been salaries and wages, and subsidies (Table 8). The wage bill absorbs between 25 and 37 per cent of total public-sector spending. In every year from 1980 to 1987, central government spending on subsidies and other current transfers – amounting to between 32 and 37 per cent of total central government spending – exceeded the wage bill, in spite of large *real* increases of between 9 and 23 per cent in expenditure on salaries and wages in most years from 1980 to 1990 (Table 9). The huge expenditure on subsidies was mainly to cover parastatal losses: all nine major parastatal groups made losses during the 1980s, which cumulatively amounted to around 7 per cent of GDP. From 1988 relative expenditure on subsidies fell steadily: to 18 per cent of the total in 1990. In real terms total government spending increased every year, except in 1981, 1983 and 1988 (Table 9). In 1983 and 1988 the real decrease was achieved mainly by cutting subsidies, and in 1981 by cutting defence.

¹³ It is difficult to infer much about the immediate effects of the first budget of the new government, because the 1980 figure includes a half-year outturn of the last budget of the old government.

As a proportion of total government spending, capital expenditure fell during the war. After independence, it accounted for a steadily increasing proportion of the total, reaching over 10 per cent by the end of the decade (Table 8). This is still very low. The departments receiving the lion's share of capital expenditure in 1979 were fuel and energy (including mining) (41 per cent); road transport (26 per cent); and general administration (23 per cent). By 1989 fuel and energy was absorbing 51 per cent of capital expenditure (having reached 67 per cent in 1984¹⁴) and general administration 21 per cent; public investment in transport and communications had fallen in relative terms to 16 per cent of total capital expenditure. Although it was a very small proportion of total expenditure (between 0.33 and 1.86 per cent), land acquisition for the purposes of redistribution occurred from 1980 to 1983 (Table 8). From mid-1983 the land resettlement programme collapsed [EIU, 1983(3,4)].

The other item of spending which grew consistently over the period was interest payments. The average real annual growth rate of government spending on interest was 8.21 per cent during the 1980s. At independence interest payments of the central government were around 7 per cent of total expenditure; by 1990 they were absorbing 16 per cent (Table 8), the equivalent of 6 per cent of GDP, exceeding all departmental votes with the exceptions of education and defence.¹⁵

There were important changes in the structure of government spending. Table 10 records spending by the largest departments of government as a proportion of total central government expenditure. Spending was redistributed from the largest two (pre-independence) headings, general public administration and defence, to education, which doubled its share of a much increased budget in 10 years. Of this, most of the funding went to pre-primary, primary and secondary education, of which only between 3 and 6 per cent was capital spending.¹⁶ The relative spending on agriculture and health¹⁷ was also increased. The other department receiving sizeable allocations is transport and communications; all other votes are negligible.

¹⁴ One can only speculate about this expenditure on capital accumulation by the department responsible for energy resources. Even during the height of Rhodesia's isolation, and after the first oil price shock, only 38 per cent of capital expenditure was allocated to this department. Towards the end of 1983 the government decided to establish a parastatal for fuel procurement, which incurred capital costs in the following financial year. The department became corrupt, necessitating the replacement of the minister in the early 1990s.

¹⁵ IMF figures show interest payments to be around 8 per cent of GDP both immediately before and after the introduction of ESAP [1996:68]. The liberalisation of interest rates should have seen the domestic interest bill soaring, while the devaluation would have increased the domestic cost of foreign interest payments. IMF figures are therefore inconsistent with the World Bank figures reflected in the table. IMF data for foreign interest payments are also lower than the Reserve Bank of Zimbabwe figures of June 1996 [p. S-40], even allowing for the fact that the IMF has recorded data for fiscal years and RBZ for calendar years. For the sake of consistency with other items of spending, the tables record series only to 1990, the most recent year for which they are available from the World Bank.

¹⁶ In the rural areas, school buildings were provided by parents and community groups, the government supplying only teachers.

¹⁷ Urban bias in health allocations meant that most funds went to hospitals rather than clinics. Even so, there have been complaints that urban hospitals are inadequately funded, and dissatisfied doctors are emigrating in large numbers.

Table 10
*Departmental disbursements as a proportion of total central govt spending, selected years 1977–89,
arranged in order of size of allocation in 1979*

	1977	1979	1980	1981	1982	1984	1986	1987	1988	1989
General administration	22.3	24.4	17.7	15.4	11.8	11.6	10.3	12.5	11.0	11.2
Defence	20.1	21.1	25.0	20.5	17.3	16.2	16.5	17.1	16.3	16.5
Education	12.7	12.8	15.5	20.0	21.9	20.4	22.2	21.0	22.0	23.5
– primary/secondary	9.7	9.6	12.5	16.6	17.5	17.0	18.8	17.4	16.4	17.6
– tertiary	2.1	1.9	1.8	2.1	2.0	2.2	2.2	2.3	3.5	3.8
Transport, etc.	10.9	7.2	6.4	6.1	6.0	4.7	7.3	7.1	6.6	5.6
Agriculture, forestry	8.1	7.0	7.0	8.5	10.4	10.9	11.7	10.0	11.0	11.1
Health	5.8	5.9	5.4	7.1	6.4	6.2	6.7	6.8	7.6	7.6
– hospitals	5.2	5.4	4.9	6.4	5.7	5.2	5.6	5.7	6.3	6.4
– clinics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(Interest	5.9	7.1	6.8	9.1	9.2	11.3	13.3	13.3	14.1	15.5)

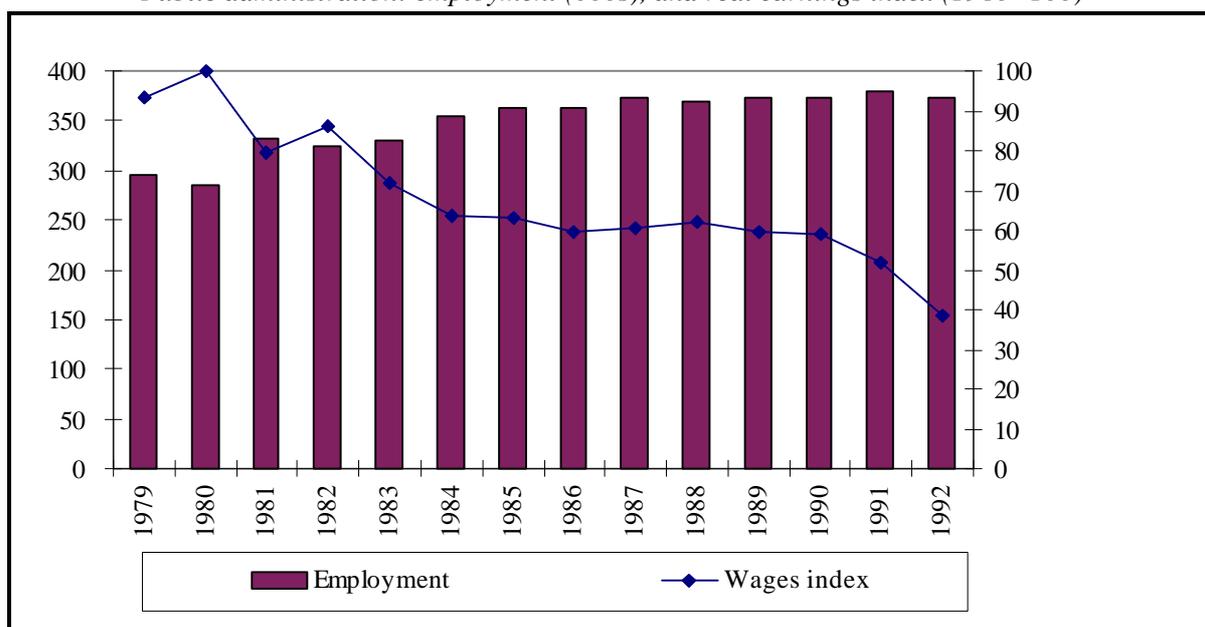
Source: calculated from World Bank data, available only to 1989.

Overall government spending grew faster than GDP in most years after 1980, in spite of the undertaking in the *TNDP* to keep spending increases to one percentage point lower than that of GDP. The main source of the spending problem in the first half of the 1980s was a substantial increase in subsidies and other current transfers, which exceeded the wage bill from 1979 to 1987. Thereafter these were cut in real terms by a third in 1988 and a further ten per cent in 1989 and 1990. Even after the introduction of ESAP parastatal losses continued to be a drain on the central government's resources. The major loss-makers were the Grain Marketing Board and the Zimbabwe Iron and Steel Company. IMF figures show parastatal losses as approximately 3 per cent of GDP during the 1990s [1996:70]. Independent calculations from data supplied by the Zimbabwean government put these at closer to 5 per cent of GDP.

Strong real growth in the wage bill continued over the whole decade. There was an erosion of real earnings in public administration, so the increase came through higher employment (Figure 2). The objectives in employing more people included (i) the extension of public services to the majority of the population (which raised the proportion of lesser-skilled staff, like primary school teachers); (ii) the indigenisation of the public sector, without retrenching white workers;¹⁸ and (iii) the provision of unskilled work as part of the poverty alleviation programme.

¹⁸ Many white civil servants opted to leave the public sector, taking generous early retirement packages.

Figure 2
Public administration: employment (000s), and real earnings index (1980=100)



In order to reduce government spending, it is crucial that public-sector employment be cut and that (particularly loss-making) parastatals be privatised, both of which are conditions attached to ESAP I and ESAP II – and both of which require large short-term expenditures. ESAP I required a 25 per cent cut in central government employment (excluding education and health), a target which was not met. The World Bank and IMF also recommended the postponement of capital expenditures (already low) until the deficit is brought under control.

2.2.1 Trends in revenue

Immediately prior to independence, tax revenue accounted for between 80 and 85 per cent of total revenue (including grants); from 1981 this proportion increased to between 85 and 90 per cent (Table 8), except in 1985 when the government received Z\$173m in grants, primarily in the form of drought relief. Only in 1985 did grants exceed 5 per cent of total revenue. Moreover, revenue from sales of assets has been negligible, while the contribution from non-tax revenue (income from public enterprises and other property; income from administrative fees; contributions to the government employees' pension fund; etc.) fell from 20 per cent in 1980 to 10 per cent in 1990. Dependence on tax revenue therefore increased during the 1980s.

Real tax revenue grew in every year except 1988 (Table 9) – even in 1984 when GDP fell. In fact real rates of growth of tax revenue constantly exceeded those of GDP.¹⁹ The government was therefore very successful in extracting an increasing proportion of national income from the

¹⁹ According to information in Table 9, it appears that in 1985 the real growth rate of GDP marginally exceeded that of tax revenue, but the change in reporting of fiscal variables in 1985 makes these calculated rates unreliable.

private sector to finance its expenditure.²⁰ Increases in personal tax rates were made more effective by fiscal drag: no changes were made in the 1980 tax bands during the entire decade.

The most marked shift in the structure of tax revenue was the increased use of import duties and, to a lesser extent, excise taxes as a source of revenue (Table 11). Before the change of government, import duties raised about 5 per cent of tax revenue. In 1981 this proportion doubled, and it continued to increase until 1990 when it was almost 19 per cent, raising more revenue than corporate income tax. The other interesting feature is how the burden of income tax shifted from firms to individuals, despite corporate tax increases following the Riddell Report's [1981] conclusion that companies were 'under-taxed'. This underscores the effectiveness of increases in rates of personal tax coupled with fiscal drag. On the other hand, although general domestic tax on goods (mainly sales tax) fluctuated as a percentage of total tax revenue, the trend was downwards. It appears that the tax structure became moderately more progressive in the 1980s, with more being paid by formal-sector employees and by importers, and less being generated through sales tax. The tax regime played an important role in transferring resources to the government for redistribution via the provision of social services.

Table 11
Major sources of tax revenue as a proportion of total tax revenue, selected years 1977–90

	1977	1979	1980	1982	1984	1986	1987	1988	1989	1990
Income, personal	25.6	29.5	31.1	27.4	27.4	29.6	31.0	30.7	31.3	30.3
Income, corporate	32.1	23.1	24.5	21.8	17.6	16.3	18.7	21.3	17.9	18.0
General goods tax	26.1	31.4	25.9	23.7	24.5	20.6	18.9	17.6	18.8	20.0
Excises	7.2	7.3	8.6	10.7	10.6	11.3	10.3	9.8	9.0	
Import duties	5.0	4.3	5.5	12.3	16.5	17.8	16.4	16.5	18.5	18.9
Source: calculated from World Bank data										

The significant increase in revenue generated by customs duties suggests that trade liberalisation, which commenced at the beginning of 1991, has had important fiscal consequences. Given the high levels of spending, other revenue sources need to be found. More revenue could be raised by increasing the rate payable on corporate profits, which was 45 per cent during the 1980s [IBRD, 19], reduced to 40 per cent in January 1994. Alternatively, more revenue would have to be raised through increasing indirect taxes, but this is politically unpopular. In 1994 the sales tax base was extended to include services, although the rate (10 per cent) was not increased. User charges for public services were introduced (or, in some cases, increased) when ESAP was implemented in 1991, but the rural poor were protected by the exclusion of primary school fees and clinic charges in the communal lands. The fact that nearly 70 per cent of the population live in these areas reduced the scope for cost recovery from this source.

²⁰ In the 1982 budget, the top rate of income tax was 60 per cent, raised from 51.75 per cent; sales tax was raised from 12 per cent to 15 per cent; and the customs duty surcharge from 5 to 15 per cent. Other taxes were introduced during the decade, for example an 8 per cent levy on wages was announced in 1988 to 'provide social security benefits'. Reductions in tax rates commenced in 1990.

4.3 Financing the deficit

The ability of the public sector to finance its expenditure, recurrent spending as well as fixed capital formation, has declined. Rather than raising tax rates, the government has relied on fiscal drag to increase revenue, while monetary instruments have been used to force private sector savings into financing the budget deficit. In the 1980s this was achieved by controls on the financial sector and by the system of allocation of scarce foreign exchange; after liberalisation it has been accomplished by high interest rates. The burden of adjustment to macroeconomic disequilibrium has therefore been shifted to the private sector, mainly through monetary instruments.

4.3.1 Trends in public and private saving

Table 12 records growth rates and shares in GDP of private and public saving from 1975 to 1989 (the years for which savings data are available). After generating surpluses in the mid-1970s, general government (primarily central government) began to dissave heavily from 1977 onwards. The tendency to run large budget deficits continued after independence, averaging around 9 per cent of GDP during the 1980s. A comparison of the private and public sector savings gaps at the bottom of Table 12 shows the extent to which private surpluses have been financing public sector dissaving. The exception was the period immediately after independence, when an excess of absorption over national income was financed by large net inflows of foreign borrowing.

Table 12
Average Trends in Private- and Public-Sector Saving, 1975–1989

	1975–79	1980–84	1985–89
Private saving/GDP	15	13	22
Public sector ^a saving/GDP	1	-1	-2
Private sector (S-I)/GDP	5	3	13 ^b
Public sector ^a (S-I)/GDP	-6	-9	-11 ^b
Source: Central Statistical Office			
Note	(a): Includes fixed investment of general government and the public enterprises.		
	(b): Data of investment by type of ownership are available only until 1987.		

Monetary and financial policies have been effective in transferring private-sector saving to central government. These are described below.

4.3.2 The financial sector and monetary policy in the 1980s

Zimbabwe's financial system is dominated by private foreign-owned institutions. The only domestically owned commercial banks are Zimbank, of which 62 per cent of the shares are held by the government, and the Commercial Bank of Zimbabwe (once a subsidiary of BCCI), which is 100 per cent government-owned.²¹ The financial system comprises a wider range of institutions than any country in Sub-Saharan Africa other than South Africa. It has an active stock exchange,

²¹ The government also controls the reinsurance corporation, although insurance is dominated by foreign capital.

which provides a market in government and Agricultural Marketing Authority (AMA) bonds, as well as in company shares.

After independence in 1980, and until liberalisation began in 1991, the government of Zimbabwe exerted some controls over the financial sector, although there was less intervention than in most other African countries [Harvey, 1996:4–9]. There was no pressure for the indigenisation of the banking sector.²² The government introduced measures, including investment incentives, to encourage the extension of banking services to the deprived communal areas. Since 1985 some institutions have sent mobile units to rural locations to provide facilities to depositors. As very little bank lending occurs to small-scale farmers [interviews], this has effectively assisted in the transfer of rural savings to finance spending in urban areas.

The central bank controlled interest rates directly; and regulations existed (and still do) as to the proportion of assets some financial institutions must hold in prescribed government securities: 60 per cent in the case of insurers and pension funds; 100 per cent in the case of the Post Office Savings Bank [Moyo, 1992:140].

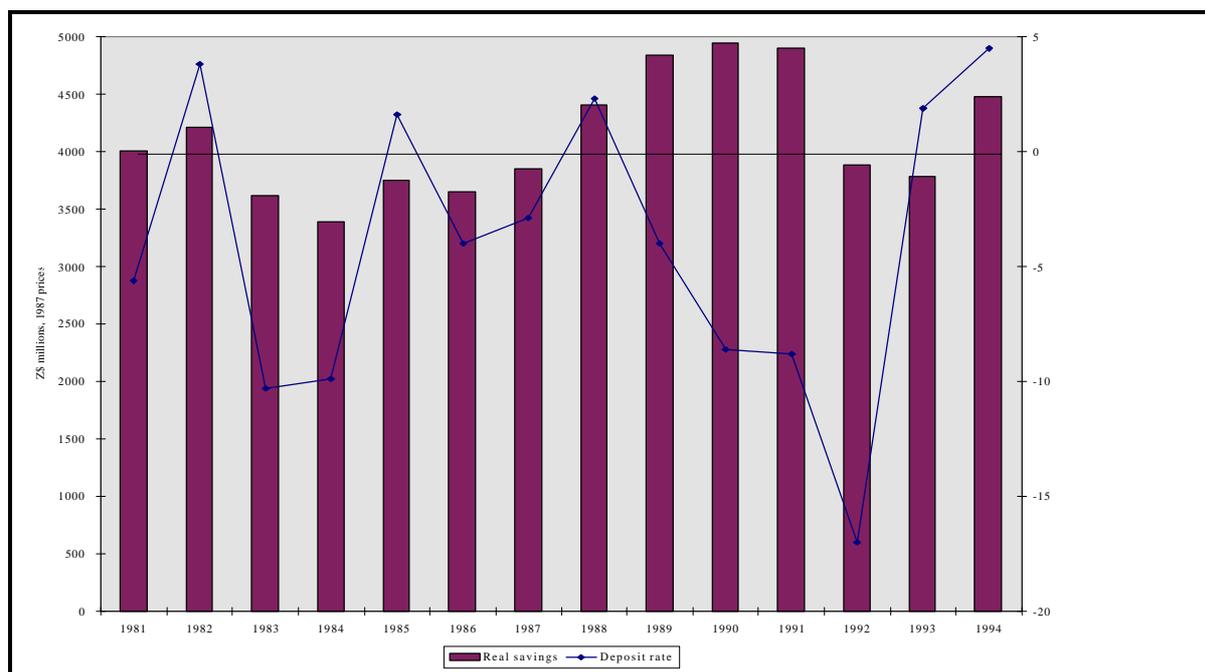
Nominal interest rates were raised from 1981 in line with world trends and with anti-inflationary monetary policy objectives. However, the Reserve Bank relied on direct controls over credit expansion, rather than on interest rates to control the demand for money, so that real rates fluctuated with the rate of inflation.²³ Neither was the change in interest rates responsible for attracting additional savings into the banking system. Inflation-adjusted deposit rates were more often negative than positive between 1980 and 1994 (Figure 3), and there was no discernible trend in the ratio of M2 to GDP (Table 3) or real deposits (excluding demand deposits) held with financial institutions (Figure 3).

²² The authorities have been extremely cautious about issuing licences to new banking institutions. Even with the development of new banking services since liberalisation of the sector commenced in 1991, indigenous entrepreneurs have been granted licences to open new merchant banks, but not commercial banks [interviews].

²³ Although the nominal cost of borrowing adjusted only for inflation was positive until inflation rose in the 1990s, the real cost of borrowing was negative in every year after allowing for interest costs being tax-deductible [Harvey and Jenkins, 1993].

Figure 3

Real deposit rates (%) and real savings with financial institutions (1987 Z\$ millions), 1981–1994



Source: Reserve Bank of Zimbabwe

Note: Savings with financial institutions comprises all deposits other than demand deposits

Statutory liquid asset ratios, rather than interest rates, were the means by which the government ensured appropriation of savings held in the banking system to finance the large public-sector deficit. Statutory requirements ensure a market for issues of government stock and bonds, and Treasury Bills are held as liquid assets by both the banking sector and other investors (mainly finance houses). Since independence over 50 per cent of finance has come from the non-bank domestic financial sector (Table 13). This form of financing was very successful in containing inflation, at least until 1991, because monetisation of the budget deficit was limited.

Table 13
Deficit financing: source as a percentage of the deficit-before-borrowing

	1976	1980	1981	1983	1985	1987	1989	1991
Domestic	100.8	79.0	44.2	89.0	4.8	78.3	88.4	94.0
– non-bank	10.3	n.a.	58.1	73.1	55.4	51.0	n.a.	85.1
– monetary authorities	83.4	n.a.	28.9	18.2	-52.6	26.3	n.a.)
– deposit money banks	7.0	n.a.	-42.9	-2.3	1.0	n.a.)	8.9
Foreign	-0.8	21.0	55.8	11.1	95.2	21.7	11.6	6.0

Source: compiled from World Bank and RBZ data.

Foreign exchange allocations were the other instrument of official control over bank lending. Foreign exchange was allocated administratively, with import licences and quotas as the primary instruments.²⁴ An allocation of foreign exchange effectively guaranteed profitability; any firm unable to get foreign exchange was probably not creditworthy, and, because of domestic dependence on imported intermediate goods, would not require credit [interviews]. Directed credit was therefore unnecessary, as exchange controls provided the government with effective control over private sector economic activity [Harvey, 1996:8]. The system of import regulation was a means of *generating* high private-saving rates, both by forcing the postponement of consumption of imports and by pushing up prices and thereby profits in rationed sectors, shifting the distribution of income in favour of those with higher saving rates [Davies *et al*, 1994:166].

There was a relaxation of foreign-exchange controls after independence, but the rapid growth of imports, financed by short-term foreign borrowing on commercial terms [World Bank, 1995], was unsustainable. The government's response was to intensify the import controls after 1983, although the drought of 1984 made large food imports (financed by aid) a priority. Private saving increased sharply from the mid-1980s onwards, exceeding 20 per cent of GDP (Table 12). This is high for a lower middle-income developing country [Elbadawi and Schmidt-Hebbel, 1991:46]. Greater domestic saving is mirrored in the distribution of deficit financing between domestic and foreign sources of finance (Table 13). The proportion of the deficit financed by domestic borrowing was sharply reduced to 44 per cent in 1981 from 79 per cent in 1980. It fluctuated dramatically in the first half of the decade, falling to below 5 per cent in 1985, mainly because of grants and concessional loans received to relieve the effects of the drought. However, increasingly from 1984 and especially from 1987, most finance was raised from domestic sources as Zimbabwe attempted to adjust, without recourse to the IMF, to the huge foreign debt it had accumulated in the four years after independence.

4.3.3 Monetary policy from 1991

Liberalisation of the financial sector was initiated as part of an IMF/World Bank-sponsored structural adjustment programme in 1991. Under the agreement reached with the IMF, it was intended that a greater proportion of the budget deficit would be funded from external sources: 30 per cent of the 1991/92 deficit.

Also in line with the agreement, interest rates were raised in February 1991. This was intended, among other things, to attract more savings into the financial system. Perversely, savings deposits fell, and monetary expansion was high, as inflation caused real rates to fall (Figure 3). From the first rate increase in February 1991, deposits appeared to grow at a slower rate, at least until 1994 (Figure 3). It is possible that accelerating inflation discouraged savings in the form of deposits, because real returns became more negative, and because rising inflation created inflationary expectations. It is more likely that the simultaneous liberalisation both of some imports and of the foreign-exchange market released the import constraint, enabling private agents to satisfy postponed consumption. Imports surged.

²⁴ The process included forecasting expected foreign exchange supply every six months, ensuring that priority users (export, some government departments) had their needs met, and then distributing the residual to other users, frequently on the basis of historical allocations [interviews]. Over time, the amounts allocated varied only marginally according to short-term availability.

The rise in interest rates in February 1991 also had the unintended effect of reducing the willingness of financial intermediaries to take up new issues of government stock. Two new issues were so severely undersubscribed that they had to be postponed, while investors waited for a further increase in interest rates.²⁵ Monetary expansion during the first half of the year was high (M2 increased 41.6 per cent from August 1990 to August 1991), partly because of an increase in government borrowing, and partly because of an increase in private-sector demand for credit which was accommodated by the authorities. This exacerbated the inflation caused by the decontrol of prices, the depreciation of the Zimbabwe dollar and excess demand. In September 1991, the monetary authorities moved to a more market-determined interest rate, and money-market rates rose by 5 percentage points. Restrictive policy measures aimed at reducing the rate of inflation were introduced, including the tightening of rediscount policy, an increase of the reserve ratio for commercial and merchant banks, and a narrowing of the definition of liquid assets. Despite these measures, inflation accelerated, averaging 42 per cent in 1992 when the severe drought caused food and other prices to soar. Since the end of 1991 the Reserve Bank has pursued a policy of maintaining a tight monetary environment, primarily in an attempt to reduce the inflationary impact of the government's worsening fiscal position.

In 1993 the credit squeeze began to take effect. Assisted by the agricultural recovery, the rate of inflation fell. Positive inflation-adjusted interest rates were achieved, and the level of deposits held by financial institutions rose in 1993 and 1994. However, the thinness of capital markets has meant that the monetary authorities cannot rely on market-oriented instruments of monetary policy for stabilisation. It has also meant that the response of money markets to interest rate increases has been highly volatile. At present, financing the budget deficit still relies on prescribed asset ratios, and on foreign financing.

4.3.4 Foreign financing of the deficit

Prior to independence, most foreign investment was direct investment: after UDI in 1965 Rhodesia's access to foreign borrowing was reduced by international sanctions. On the other hand, foreign direct investment rose 300 per cent between 1965 and 1979, and at independence 70 per cent of the capital stock was foreign-owned (the ratio in mining was even higher). Much of this was from re-investment of profits which could not be remitted abroad because of tight exchange control regulations. The country was considered 'underborrowed' at independence [EIU, 1980(2)]: the foreign exchange reserves in 1980 were equal to three months' worth of imports, and at the end of 1979 government foreign debt was about US\$500m (US\$200m from before UDI; the rest owed to South Africa). This was equivalent to 12.5 per cent of GDP and 49.3 per cent of exports in 1979.

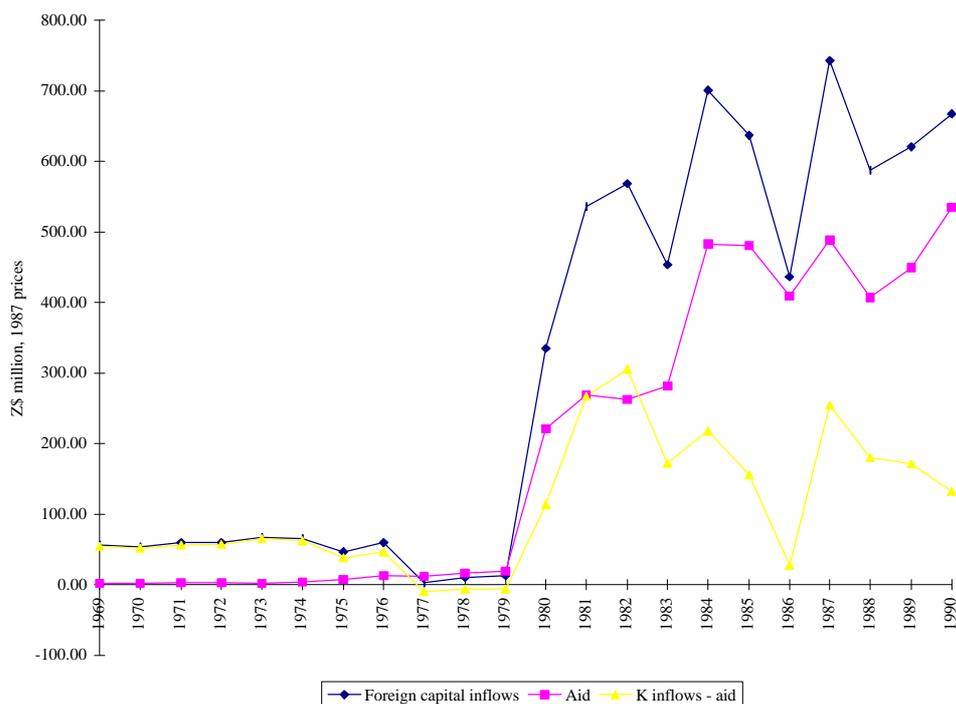
Zimbabwe's huge foreign debt was accumulated in just three years after independence. The debt service ratio rose from 3.8 per cent at independence to 37.3 per cent in 1983 [*World Debt Tables*,

²⁵ The immediate effect of the introduction of more market-determined interest rates was volatility in money market rates as banks struggled to adjust to the changed monetary management [RBZ, 1991: 5]. Market shortages, worsened by the exclusion of certain bills from the definition of liquid assets, pushed nominal interest rates up (to 40 per cent in the case of 90-day negotiable certificates of deposit) in October 1991. Even reducing the statutory reserve requirement did not halt the general rise in interest rates, and the authorities temporarily capped interest rates in order to restore orderly trading in money markets. This was achieved by the middle of December, when the ceiling was removed.

1990-91, p. 426]. It remained high until 1993, and then declined to 25.3 per cent in 1994 [RBZ, March 1996:S37]. The dramatic increase in net borrowing, on both commercial and concessional terms, is shown in Figure 4.²⁶ Inflows of foreign direct investment were negligible, so the net capital inflows are almost exclusively borrowing. Net inflows on concessional terms are also plotted, and the bottom curve plots the difference between the other two series. The excessively rapid increase in foreign indebtedness was one of the highest in the world.

Figure 4

The path of net foreign capital inflows and aid to Zimbabwe, constant prices, 1969–1990



Note: the top curve plots the sum of the other two series

From 1984 the authorities attempted to pursue a more sustainable policy with respect to foreign borrowing, and borrowing on commercial terms was reduced, except during the 1987 drought when Zimbabwe needed to import food. However, the agreement signed with the international financial institutions at the end of 1990 included a provision for a greater proportion of the deficit to be financed from external sources. The reason was the belief that domestic financing was crowding out private-sector investment [Elbadawi and Schmidt-Hebbel, 1991:46]. According to the Reserve Bank, the raising of interest rates in 1991 attracted some short-term foreign capital [QESR, 1991: 6]. The rate of net foreign capital inflows accelerated in 1992. This, together with reduced private-sector saving, assisted a switch to foreign savings to finance domestic dissaving.

²⁶ The series 'foreign capital inflows' includes all net flows from OECD countries, Arab countries, Central and Eastern Europe and multilateral agencies: official development assistance plus other official and private capital. 'Aid' includes only net concessional flows (official development assistance).

By the end of 1993 external debt had reached over 80 per cent of GDP, up from 45 per cent of GDP prior to liberalisation (Table 14).

Table 14
External debt as a percentage of GDP, and external debt service as a percentage of exports

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
External debt	53.0	53.8	45.3	45.5	45.2	56.6	76.6	82.6	79.7	66.9
Debt-service ratio	29.4	29.4	33.3	27.5	29.4	30.9	30.0	29.5	25.3	21.5
Source: RBZ										
Note: Figures for 1992 to 1995 are provisional										

The debt-service implications of the growing external debt in the 1990s were less onerous than that which was accumulated in 1980 to 1983: although the debt-service ratio (debt service as a proportion of export earnings) reached 30 per cent in 1990 and 1991, by the end of 1995 it was 21.5 per cent. The reason has to do with the structure of the debt. Whereas in the early 1980s Zimbabwe borrowed short-term at commercial rates, in the first half of the 1990s an average of 90 per cent of total external debt was medium- and long-term debt, and a growing proportion of this was at concessional rates.

Greater reliance on foreign savings has, in the past, substituted for private domestic saving, given public-sector dissaving. In the early 1980s foreign capital inflows allowed higher rates of private investment and consumption to occur. The effective generation and appropriation of private savings by the combination of monetary and exchange-control instruments squeezed both private investment and consumption in the second half of the 1980s. In the 1990s the response of private investment to structural adjustment has been very slow, and high interest rates have discouraged borrowing for consumption. Therefore, in spite of the growth in foreign borrowing, there has been a huge increase in domestic savings held in the banking system: the ratio of excess to total liquid assets rose from 14.8 per cent in 1989 to 53.7 in 1993 and then to 73.1 per cent in 1994 (Table 3). Increased access to foreign savings does not appear to be encouraging higher domestic expenditure.

4.3.5 Policy consistency

The policy stance of Zimbabwe's first majority government was orthodox in the sense that the private sector was left to pursue its own interests, in spite of radical rhetoric. However, the government operated without an effective budget constraint, and the economic imbalances which resulted were resolved by direct controls. The loose fiscal stance and resultant dissaving was reflected in the balance of payments as a persistent deficit. A reserve-constrained government has limited choices: it must reduce the availability of domestic credit; or it must choose a combination of exchange rate, trade restrictions and expenditure taxes which will bring about balance-of-payments equilibrium for a given budget deficit. In Zimbabwe, as in other African countries, exchange-rate overvaluation was made compatible with the balance-of-payments constraint by imposing import controls. Foreign exchange shortages induced both domestic saving and capital flight, and restrained inward investment. Any investment that was made, was skewed towards the non-tradable and import-substitution sectors, which were implicitly subsidised by the exchange-rate overvaluation and by government spending on non-tradables. When the external debt

problems necessitated an export drive, this was incompatible with the fiscal stance. The combination of import controls and a partial monetisation of the deficit, which drove up the money supply, could have been resolved by price inflation, but this was restrained by price controls, which, in turn, generated excess demand, especially for consumer goods. The shortages were clearly the result of an inconsistent set of macroeconomic policies, but they served to facilitate the smooth financing of the public-sector deficit by private-sector saving.

Liberalisation of the current account under ESAP released the foreign-exchange constraint. However, simultaneous liberalisation of financial markets closed off most of the non-inflationary means of domestic financing [Collier and Gunning, 1995c], and continued dissaving by central government generated a sharp increase in domestic interest rates. The foreign-exchange shortage was replaced by a domestic credit squeeze: high interest rates persisted, even though financial institutions had large reserves of liquid assets. These were generated as financial institutions found it both profitable and less risky to lend to central government. At the same time, the exchange rate was intermittently allowed to become overvalued as the rate of inflation outstripped the rate of depreciation, with periodic discrete adjustments. As domestic and foreign debt mounted, both domestic inflation and exchange-rate overvaluation were in the fiscal interests of the government. However, the policy undermined the trade liberalisation, and, together with high inflation and high interest rates, created an uncertain economic environment. The uncertainty was a clear result of an inconsistent set of macroeconomic policies.

Both prior to and after liberalisation the fiscal position was incompatible with other economic policies. The links between economic policies and outcomes need to be more rigorously explored. The economic outcomes are described in the next section. Thereafter the links between the macroeconomy and economic policy are analysed.

5. Economic outcomes

5.1 Trends in the growth and composition of output

Zimbabwe performed better than many other Sub-Saharan African countries during the 1980s, although the situation has deteriorated since 1991. Despite considerable variations in economic growth rates, the real annual average for the 1980s was higher than that for Sub-Saharan Africa as a whole, and much higher than that for its major trading partner, South Africa (see Table 15). The GDP figures published by the World Bank are for growth in real output, and so exclude effects of the terms of trade on national income; Zimbabwe's terms of trade improved some 20 per cent from 1980 to 1986 [RBZ, 1991:S39], so real annual national income growth would have been higher than the real average of 2.9 per cent shown in the table. At any rate, there are discrepancies between the figures published by the World Bank and real GDP figures published by the Reserve Bank of Zimbabwe. The latter show an average real rate of growth of around 4 per cent *per annum*, which – given annual population growth of around 3 per cent – would mean

a small increase in income per head over the decade.²⁷ Zimbabwe also managed to hold its inflation rate below that of its neighbours, at least until 1991.

Table 15
Comparative economic indicators, 1980s (per cent per annum)

	Zimbabwe		SSA	Lower middle-	South Africa
	1980s	1990s	1980s	income 1980s	1980s
GDP growth	2.9	1.5	2.1	2.6	1.3
Population growth	3.4	3.2	3.1	2.2	2.4
Inflation	10.8	26.2	20.0	64.8	14.4

Notes : Averages for Sub-Saharan Africa (SSA) and lower middle-income developing countries (which include Zimbabwe) are weighted.
1990s = 1990–1994

Source: *World Development Report 1992*; IMF Staff Country Report No.96/33

After 1990 economic growth slowed and the rate of inflation accelerated. Trends were interrupted by the worst drought in living memory in 1992, which generated a 25 per cent fall in agricultural output, a real contraction in GDP of 7 per cent, and an increase in prices of 42 per cent. The recovery of 1993 and 1994 was ended by another drought in 1995.

For most sectors average growth rates were similar during the 1980s (Table 16). If output in 1980 is represented by an index of 100, the 1989 indices for GDP, agriculture, manufacturing and services are 138, 133, 134 and 138 respectively. Nevertheless, the growth paths of the three sectors differed during the decade. Also, sectoral growth rates for the decade are different from longer-term growth rates for the 21 years 1969–1989.

Table 16
Average sectoral growth rates, 1980–89, compared with those for 1969–89

	GDP	Agriculture	Manufacturing	Industry	Services
1980-89	2.5	2.9	2.6	2.2	2.9
1969-89	2.8	1.6	3.4	1.9	3.7

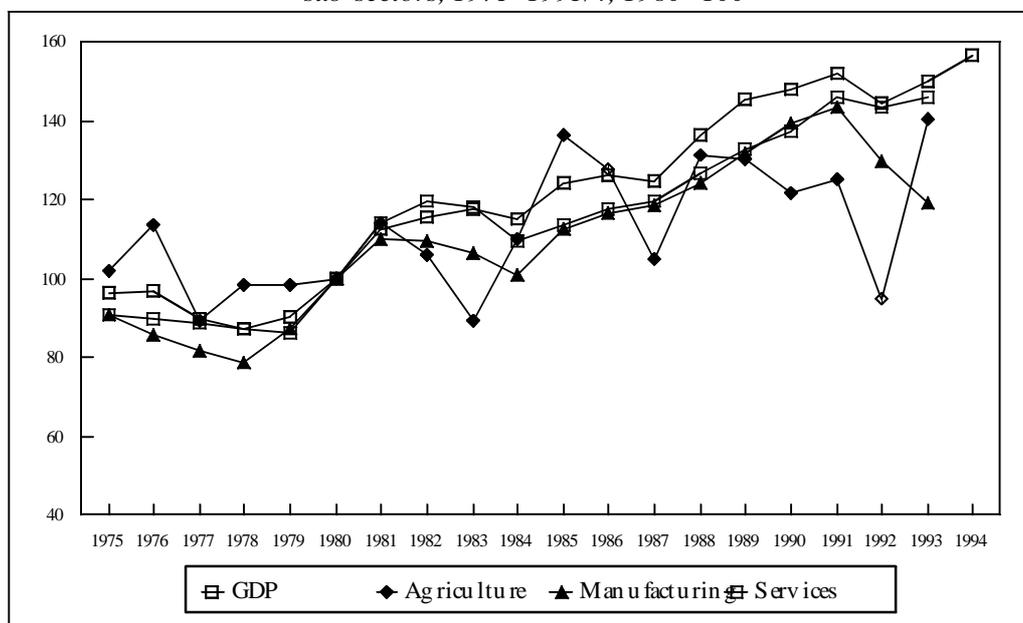
Source: calculated from World Bank data

Notes : average growth rates are coefficients from OLS regressions of the logs of the variables on a time trend
: Industry includes manufacturing, mining and construction
: Agriculture includes forestry and fishing
: * 1976–1989

²⁷ These figures also show greater volatility in output growth: spectacular real increases of 10.6 per cent (1980), 12.5 per cent (1981) and 9.2 per cent (1988), and negative real growth of between one and two per cent in 1984 and 1987 [RBZ, 1991:S39]. Riddell [1992] explains the variability as being a consequence of drought and the availability of foreign exchange. The World Bank figures show the major source of growth being in the service sector: this would include a huge real increase in expenditure on education from 1980 to 1990.

Growth in the agricultural sector (including forestry and fishing), which is responsible for about one quarter of formal-sector employment, was most volatile (Figure 5), being very sensitive to changes in the weather: 1981, 1985 and 1993 were years of bumper harvests; 1983-4, 1986-7, 1991-2 and 1995 were years of drought. On average, the sector performed better during the 1980s than during the previous decade. This is not surprising, since the civil war occurred in rural areas, including commercial farming areas, which adversely affected production during the late 1970s. Even without the growth in smallholder production after 1980, the sector would have shown an improvement. Within the sector there were differences. The commercial dominance of tobacco and maize continued, but maize as a percentage of total agricultural output declined in response to the intra-sectoral terms of trade turning against maize. The reason why maize production did not fall further was the at least partially successful commercialisation of small-scale farming, particularly in maize and cotton, which survive better than other crops in areas where there is no irrigation.

Figure 5
The path of real value added in GDP and the agriculture, manufacturing and services sub-sectors, 1975–1993/4, 1980=100



The manufacturing sector (17 per cent of formal-sector employment in 1990) is closely linked with the primary sectors of the economy, especially with agriculture. It is therefore not surprising that real value added in manufacturing showed a decline in 1984 and 1992–93 and a slower rate of growth in 1987, following the droughts (Figure 5). Droughts impact negatively on manufacturing, because (i) poor agricultural performance reduces aggregate demand; (ii) many enterprises process the output of the agricultural sector; and (iii) one of the primary sources of energy is hydro-electric power [Robinson, 1994]. Clearly other factors, like foreign demand, access to foreign exchange and international commodity prices, are also important. Despite tight controls on labour, credit, foreign exchange, investment and some prices, the average annual sectoral growth rate in the 1980s was 6 per cent using RBZ figures (which include a significant improvement in the terms of trade) and 2.6 per cent using World Bank figures. The main growth occurred in foodstuffs, textiles, clothing and footwear, paper and chemicals [Riddell, 1992],

which, apart from paper and chemicals, tend to be labour-intensive industries. They are also important exporters. Growth in the 1980s was lower than for the entire period 1969–89, which suggests that the 1980s policy regime was less favourable to manufacturing. There is little evidence that liberalisation has enhanced the performance of manufacturing: during the first half of the 1990s performance has been poor, with the sector contracting sharply in 1993 and 1994. The uncertainty associated with changes under ESAP, together with droughts, the loss of subsidies, higher costs and the lack of clarity concerning South Africa's trade policy towards Zimbabwe mean that the risks facing manufacturers have been particularly high. Industrialists complain that only exporters have benefited from ESAP; other firms are worse off than before controls were removed [interviews].

After the initial strong growth from 1979–82, the service sector settled down to steady growth for the rest of the decade, contributing most to overall GDP growth. This is not surprising, given that this sector accounts for over 40 per cent of GDP. Much of the growth is accounted for by the steady expansion of the public sector, including a rapid increase in employment in education, as a consequence of the government's policy of extending public services to the black population. In the private sector there was moderate growth in finance and insurance, as well as in distribution, hotels and restaurants, but little growth in transport and communication, particularly towards the end of the decade.

Not shown in Figure 5 (but included, with manufacturing, in the aggregate 'industrial sector' data in Table 16) are the mining and construction sectors, which were responsible for about 4 and 6 per cent respectively of formal sector employment in 1990. The mining sector performed poorly overall during the 1980s [Riddell, 1992], mainly because of the fall in commodity prices after the 1980–81 boom. The devaluation of the Zimbabwe dollar in 1983 reduced the impact of weak international prices on producers,²⁸ but mining was adversely affected by a rise in the prices of its main inputs: foreign exchange (for imported capital) and electricity. During the 1990s, better access to foreign exchange and higher commodity prices have improved the profitability of the mining sector, although its main growth thrust will occur in the second half of the decade, with the opening in 1997 of a new platinum mine which will become one of the largest producers in the world.²⁹

A construction boom commenced in 1980 as private agents shifted from liquid assets to fixed investment. Building plans doubled, especially for industrial and commercial buildings, and the real value of building work of the private sector increased sharply. However, from 1983 private construction slumped, and the sub-sector contracted each year until the end of the decade. Real growth rates of public-sector construction were erratic, although, if civil engineering (infrastructural) construction is excluded, public sector building after independence appears to have commenced with a lag of two years and continued to grow until 1988 (Table 6).

²⁸ A comparison of growth rates for the industrial sector in Table 2 is distorted by the sharp rise in commodity prices in 1980 and 1981, which dominates the shorter series (1980–89).

²⁹ The development of the mine represents the largest foreign investment (US\$264 million) in Zimbabwe since 1980.

The contribution of each sector to the growth of GDP is recorded in Table 17. During the years of most rapid economic growth, it was the services sector which contributed most to increases in production. Given the relative size of the sector in terms of share of GDP, this is not surprising. On the expenditure side of the economy, it was increases in consumption (public as well as private) rather than net exports or investment which fuelled economic growth.

Table 17
Sectoral contributions to GDP growth

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
GDP	4	11	13	3	2	-3	7	3	-1	-2	13	3
Agric.	0	0	2	-1	-2	3	3	-1	-3	3	0	0
Industry	2	4	3	0	-1	-1	2	2	1	1	3	2
Services	1	7	8	4	5	-4	1	2	0	-6	11	1
GDI	1	8	6	-5	3	3	-3	-1	3	3	-4	0
Net X	-3	-7	-9	0	4	7	1	11	3	-15	-4	0
Consum.n	5	9	16	8	-5	-12	9	-7	-8	10	22	3
Source: World Bank												
Key: Agric. = agriculture, forestry and fishing Industry = manufacturing, mining and construction GDI = gross domestic investment Net X = net exports Consum.n = consumption												

It appears that the combination of weather conditions and the longer-term growth path of the economy is a more important determinant of which sectors are growing or declining than any policy interventions introduced or changed during the first decade after independence. This issue is examined in greater detail in Section 6. The following sub-sections look briefly at the implications of sectoral growth for employment and wages, and at trends in private investment and consumption.

5.2 Sectoral trends in employment and wages

After an increase in 1980/81, wages in manufacturing remained constant in real terms during most of the decade, falling sharply after the introduction of the economic structural adjustment programme at the end of 1990, which removed price controls.³⁰ Employment in manufacturing rose consistently in the 1980s, and by 1989 was 23 per cent higher than it had been in 1980 (35

³⁰ In manufacturing, real wages grew more slowly than in those sectors initially strongly affected by minimum wage legislation (mainly agriculture and domestic service). An increase of 13 per cent in real terms between 1980 and 1982 was eroded by inflation (although the real improvement of 6.4 per cent achieved in 1980 over 1979 was maintained) and real wages fluctuated around 100 per cent of 1980 levels from 1983 to 1990, falling sharply thereafter.

per cent higher than in 1979).³¹ Since 1990 there has been no growth in employment in manufacturing, and high inflation has eroded real wages.

Those employed in manufacturing were on average better off over the decade as a whole than those employed in almost any other sector, including public administration. Employment in public administration grew extremely fast (and steadily) during the 1980s: by 1989 the public service (excluding those employed in education and health, where growth rates were even faster) employed 131 per cent of the 1980 staff complement. However, official statistics show average earnings plummeting in the sector (Figure 2), and by 1989 they were only 59 per cent of what they had been in 1980. Further erosion of public-sector pay – 37 per cent in real terms from 1990 to 1993 – continued in the 1990s as the government struggled to meet IMF targets. The first major strike in 1996 was successful in obtaining a 20 per cent pay increase, although within weeks civil servants resumed their work stoppages, demanding further increases.

Those in wage employment in agriculture, forestry and fishing benefited from a revision of the minimum wage in 1980, which raised real agricultural earnings by 58 per cent from 1980 to 1982. These gains were eroded in the rest of the decade, and by 1989 average farm wages were only 13 per cent higher in real terms than they had been in 1980. They continued to fall after the implementation of ESAP – by 40 per cent in real terms from 1990 to 1993. The numbers formally employed in agriculture fell by nearly 20 per cent from 1980 to 1983, and, although there was a slow but steady increase thereafter, by 1989 employment in agriculture was still only 87 per cent of what it had been in 1980. The effects on rural household welfare of improvements in farm wages was therefore offset by falling employment in the sector.

From 1988 the mining sector began to reduce the number of employees as its performance was affected by rising domestic costs and falling international prices. In construction, however, employment rose in every year after independence, in spite of the fall in private sector construction activity, because of public-sector demand. Real wages in the sector were static.

5.3 Trends in private consumption and investment

Rising private-saving rates were achieved by a squeeze on private-sector consumption. As the ratio of private saving rose to over 20 per cent of GDP in the second half of the 1980s, the private investment ratio fell from an average of 10 per cent from 1975 to 1984 to an average of 8 per cent in the second half of the decade (Table 18). The contraction in private consumption was even more dramatic: from an average of 63 per cent in the first half of the decade to 52 per cent in the second half.

³¹ For the manufacturing sector there is some discrepancy between official employment figures and those published by the IMF. The growth in manufacturing employment occurs at a similar rate in the two series until 1982, diverging more and more thereafter, with the IMF index being 10 percentage points lower by 1988 than that generated from CSO statistics. Figures for real wages are more similar, and the direction of change is the same in every year during the decade. CSO figures are quoted in this paper for the sake of consistency with other sectors; the IMF statistics do not show employment figures for all sectors.

Table 18
Ratios of private savings, investment and consumption to GDP, 1975–1989 (%)

	1975–79	1980–84	1985–89	1990–93
Private savings	15	13	22	n.a.
Private investment	10	10	8*	n.a.
Private savings gap	5	3	13*	n.a.
Private consumption	62	63	52	59
Source: Calculated from World Bank, <i>World Tables</i>				
Note *: Data for investment by type of ownership available only to 1987				

Unfortunately data are not yet available for private saving and investment during the ESAP period. There seems to have been a partial recovery in the ratio of private consumption to GDP. Given the high ratio of excess liquid assets in the banking system, it may be that renewed foreign borrowing has again permitted a greater degree of private consumption. If there is no investment recovery, and borrowings are being used to finance consumption (of the public as well as the private sector), this could have serious implications for future debt service.

In the following section the interactions between the public-sector deficit and the macroeconomy are examined using a computable general equilibrium model. This enables us to trace out the effects of economic policies and external shocks on economic outcomes.

6. The budget deficit and the economy

6.1 Introduction

Exogenous shocks and domestic macroeconomic policy jointly influence prices³² and outputs at the sectoral level. It is difficult to isolate and identify the effects of macroeconomic policies. Counterfactual experiments using computable general equilibrium (CGE) models are one way of disentangling the effects of exogenous and policy variables, although the results are critically dependent on the assumptions made when constructing the model.

In this section a real-effects model is used to assess the impact of external and policy variables on the size of the budget deficit, and then to examine the effects of the public-sector deficit on the macroeconomy. The model was developed by Davies, Rattsø and Torvik [1993; 1994]. It has no financial sector. Consequently, the relationship between fiscal and financial sectors is not explored. However, the financial-fiscal relationships for the period 1982 to 1989 have already been analysed by Elbadawi and Schmidt-Hebbel [1991] and Morandé and Schmidt-Hebbel [1994]. The focus of the experiments reported in this chapter is on the real effects of fiscal policy from 1981 to 1988. Where relevant, the results are compared with the outcomes of the Elbadawi–Morandé–Schmidt-Hebbel simulations so as to present a fuller picture of the impact of the fiscal imbalance on the real economy of Zimbabwe during the 1980s.

³² Prices in Zimbabwe have been distorted by price controls, although most subsidies on tradable goods were removed following the 1982 devaluation of the currency [Muzulu, 1992:131].

The analysis proceeds as follows. First, important aspects of the model are described.

Second, the model is used to investigate which variables had the greatest impacts on the size of the deficit. The earlier argument that external shocks contributed to the size of the deficit is tested. Thereafter, the effects of marginal changes in policy variables on the size of the deficit are analysed: the real exchange rate – which is treated as external to the fiscal authorities – and fiscal variables. Morandé and Schmidt-Hebbel found that fiscal policy variables were more important than other macroeconomic variables in increasing the size of the deficit – that is, that the ballooning deficit was the result more of factors *within* the control of fiscal policymakers than of external factors. This finding is tested using the real-effects model.

The external (non-fiscal) macroeconomic variables examined below are (i) fluctuations in agricultural output (and therefore of weather conditions); (ii) variations in the terms of trade; and (iii) changes in the real exchange rate. The policy variables tested are (iv) the government wage bill; (v) government spending on non-tradable capital goods; and (vi) profit-income and indirect tax rates.

Third, the direction of interaction is changed, and the effects of a reduction in the size of the deficit on certain macroeconomic variables is simulated. The experiments are concerned with marginal changes in (i) the government wage bill, (ii) spending on construction, and (iii) different tax rates on GDP and sectoral output, on inflation, on private consumption, on exports (as an indicator of foreign-exchange availability), and on the share of low-income earners in GDP.

The changes made to variables in each of the following experiments are small. This has the effect of producing only small – in some cases trivial – results. The interesting questions about the budget deficit in Zimbabwe concern what would have happened if *non-marginal* changes had been made: for example, if subsidies had been eliminated; or if an ESAP-type package had been implemented from 1981. However, a CGE model has a given structure based on past economic relationships. The elasticities hold for marginal changes, but it cannot be assumed that relationships will hold if non-marginal changes are introduced. When the government sector is large, sizeable cuts in government spending, for example, are likely to cause structural shifts, requiring modifications to a model of the economy. Moreover, models assume that politics is neutral, and that policy changes are therefore possible. With some non-marginal changes, this assumption cannot be made.

Each of the following experiments is therefore possible in terms of both the model structure and the political feasibility of implementation. Even though the results are small, in each case the direction of change is as expected. Moreover, it is interesting to see how small the changes needed to be to make a significant impact on the size of the deficit relative to GDP.

6.2 The model

Outcomes of CGE simulations are deterministic, dependent on the structure of the model.³³ It is important that the theoretical base and the assumptions of the model reflect the relevant elements of the structure of the economy and of the policy rules which prevail. One problem with calculated parameters is that they are likely to be a function of the circumstances that existed during the period covered by the model and should themselves be endogenous. CGE models are the best means at our disposal of separating out the effects of shocks and policies. However, they assume a particular structure of the economy and, moreover, that alternative shocks or policies would not have modified that structure in any significant way.

The real-effects model of Davies, Rattsø and Torvik has five productive sectors, each producing a single representative good or service. These are:

- food agriculture: producers are both commercial and communal farmers, and output is traded (surpluses are exported, and imports substitute for both commercial and subsistence output during harvest failures). The government has a target for food consumption, so that a fall in output raises food imports, thereby reducing the foreign exchange available for non-food imports. Prices are flexible, but import regulation smooths out fluctuations in supply.
- non-tradable consumer goods: services, electricity and transport. Adjustment is demand-determined, and prices are flexible. Note that this sector corresponds to the service sectors of the national accounts. In reality, the service sectors also produce some exports (which are accounted for in the model) – so the term ‘non-tradable’ applies to most, but not all, of the output of this sector.
- non-tradable capital goods: construction. The sector is import-dependent and consequently affected by variations in import capacity, itself dependent on export revenues and (exogenous) foreign savings. The sector’s demands for foreign exchange are met only after allocations for priority outlays (tradable investment goods, competitive imports and intermediate imports to exportables) have been made. Output therefore adjusts in response not only to demand conditions but also to supply constraints. Prices are related to a fixed mark-up over marginal costs.
- exportables: mining, large-scale non-food agriculture, some manufacturing. Output satisfies domestic demand first, and the surplus is exported. The sector is import-dependent, but its demand for imports takes priority over the demand of other sectors. The sector is a price-taker in world markets, and prices equal marginal costs.
- importables: the rest of manufacturing. The sector is import-dependent and rationed, so that adjustment is supply- as well as demand-determined (demand for foreign exchange is met only after priority sectors have received their allocations), as with the non-tradable capital goods sector. Prices are determined by a fixed mark-up over marginal costs.

³³ The model is reproduced in Appendix A.

There are three factors of production:

- capital, which is undifferentiated. Investment is exogenously determined.
- unskilled labour, which experiences high unemployment, and is paid the statutory minimum wage. It has no opportunity cost in the model.
- skilled labour, which is scarce. Wages reflect market conditions; wages adjust to clear the market for skilled labour.

The categorisation of labour into ‘skilled’ and ‘unskilled’ in the model is somewhat misleading: the division was made on the basis of the wage structure, which only loosely approximates the skills structure (the top third in the wage distribution is ‘skilled’). For example, most teachers and nurses are included in the low-wage and therefore the unskilled category.

There are four functional income groups:

- producers of food
- unskilled labour
- skilled labour
- profit-takers

These have different propensities to save, which is important for overall savings formation: small-scale producers of food and unskilled labour are low-income, with a lower savings propensity. Skilled labour, profit-takers and large-scale farmers are high earners, and save a greater proportion of their income. Net factor payments from abroad are assumed to accrue exclusively to high-income groups.

Savings rates are also influenced by access to non-competitive imported consumer goods, and the demand for imports is a fixed function of net consumer expenditure. Import rationing means that consumption is postponed when access to foreign exchange falls, and savings therefore increase. It is a strength of this model that this relationship, described above, is explicitly captured in the model’s structure.

The government sector is simple.³⁴ Revenue is the sum of taxes on profits and indirect taxation, the latter being related to output and prices in each of the five productive sectors. Spending is a function of the government’s demand for skilled and unskilled labour, at the relevant wage rates, and its demand for both domestically produced goods and imports. The government has a target for food consumption in the economy, so that, if food production falls, government imports of food and, consequently, government spending rise. The government does *not* automatically have priority in the allocation of foreign exchange for non-food imports. The deficit is defined as the

³⁴ The definition of the public-sector deficit differs from that of Morandé and Schmidt-Hebbel, who analyse the consolidated non-financial public sector (CNFPS). The CNFPS includes general government and public enterprises. In the model of Davies *et al*, parastatals are part of the production sector, and parastatal subsidies are not modelled explicitly, so the government sector comprises general government only.

difference between revenue and expenditure, and excludes other general government income and financing.

The consequences of a fiscal squeeze are felt via the labour market and via changes in public-sector demand for domestic output. The government sector also affects the real economy via the policy rule which relates food consumption to a target: a fall in domestic production increases the allocation of scarce foreign exchange to food imports, increasing the squeeze on other sectors. It is this policy rule which determines the impact of drought on the economy.

There is no financial sector. This is important as a real-effects model without financial assets cannot address whether the financial effects of, for example, a fiscal squeeze or deficit financing feed through into the real economy. The implicit assumption is of the neutrality of changes in money demand or supply. The omission of the financial sector is serious, given the important role, discussed earlier, of the financial sector in transferring private-sector saving to central government.

The capital stock is historical and investment is exogenously determined. This means that the model does not pick up effects of policy changes or shocks on owners of capital, although the effects on profit-takers may go some way to approximating these, as most investment is financed by retained profits.

The model also does not incorporate the differential effects on rural and urban unskilled households of changes in external circumstances or different policy measures. It is therefore not possible to assess the specific effects of fiscal policy on the rural poor.

The strengths of the model include the explicit inclusion of the relationship between private savings and import rationing through the administrative allocation of foreign exchange; the modelling of the importance to government of feeding the population during droughts; and price controls. Price controls for most non-agricultural products were administered on the basis of a fixed mark-up over costs, which did not threaten profitability, but restrained price increases by limiting mark-ups.

In summary, the dependence of formal-sector production on imported intermediates creates supply constraints, reducing output in rationed sectors to below what it might otherwise have been. The availability of foreign exchange to rationed sectors is related to exports of both exportables and food agricultural sectors, to the demand for imported intermediates in the production of exportables and for imported investment goods, and to the output of food agriculture (a drought reduces the foreign exchange available for non-food imports). Import rationing has another effect: it causes the postponement of consumption, generating higher savings than might otherwise have accumulated, financing the large public deficit. In other words, private savings are a function of the availability of foreign exchange – or of rationed non-competitive consumer imports.

6.3 Changes in macroeconomic and policy variables and the relative size of the deficit

It was argued earlier in this chapter that agriculture is an important determinant of overall economic performance, which affects tax revenue, and that droughts increase government recurrent spending, particularly on meeting food shortages. The economy has been subject to severe weather-related shocks since independence, and it is hypothesised that this has exacerbated the fiscal position. In the first experiment reported, it is assumed that while the total output growth of food is unchanged for the period 1981 to 1988, the growth rate is stable throughout the period. Comparing the resulting deficits with the reference path will give an indication of the extent to which agricultural shocks, particularly to the food supply, have affected the fiscal position.

Changes in world commodity prices were argued earlier to have generated fluctuations in GDP and therefore in tax revenue. The economy was exposed to both windfall gains and losses after independence, although the model does not cover the period from 1979 to 1980 when there was an unprecedented boom in commodity prices. In the second experiment, stable terms of trade from 1981 to 1988 are assumed, and the resulting path for the economy is compared with the reference path.

The shortage of foreign exchange experienced by Zimbabwe since sanctions were imposed in the late 1960s continued after sanctions were lifted, because of aggregate dissaving and limited foreign investment. Because public-sector expenditure reduction was not undertaken, the alternatives were to ration foreign exchange or to devalue the currency. The currency was devalued in the early 1980s, but remained overvalued throughout the decade, and reliance for external balance was placed almost completely on foreign-exchange rationing. The third experiment examines the implications for the economy in general and the fiscal position in particular if there had been greater emphasis on depreciation as an instrument of adjustment. A steady annual one per cent nominal depreciation is assumed.

The first three experiments are reported below as variations in external (to the fiscal authorities) macroeconomic factors.

Changes in fiscal-policy variables contribute directly to the relative size of the budget deficit. Growing public-sector employment contributed to burgeoning recurrent expenditures. One goal of increased employment was the indigenisation of the civil service. Another was expanded public-service provision. Two simulations are undertaken to examine the effects of the wage bill on the relative size of the deficit. The first is a ten per cent reduction in unskilled (low-wage) employment only (experiment 4a), on the grounds that some of the increase in lower-paid employment was in order to fulfil employment (welfare) objectives. As most teachers and nurses are included in the low-wage category, this experiment also simulates the effects of a slower expansion of education and health provision. The second (experiment 4b) is a ten per cent reduction in total employment – both skilled and unskilled – in order to assess the effect on the deficit of a slower increase in public-service provision.

During the 1980s the government spent a large proportion of the commodity-export windfall income on a construction boom, which continued after commodity prices had fallen. In the fifth experiment reported, a ten per cent fall in government demand for construction is assumed.

Comparing the resulting deficits with the reference path will give an indication of the extent to which general-government construction expenditure affected the fiscal position.

Higher spending could have been financed by higher taxes. The government was reluctant to increase profits' taxes, because of opposition from the powerful white-dominated lobby groups, or to increase domestic expenditure tax rates, because they may be regressive.³⁵ Earlier it was argued that increases in profits and indirect taxes are possible and necessary to reduce the deficit before borrowing. Indirect and profits' tax rates one percentage point higher than the reference paths are assumed in experiments 6a and 6b, in order to examine their effects on the relative size of the deficit, given the expenditure undertaken by the government from 1981 to 1988.

Experiments 4 to 6 are reported below as marginal changes in policy variables. Although a fundamental restructuring of government spending was required, the model can legitimately be used only to simulate changes that assume unchanged elasticities. The impacts of very small changes are likely to be undramatic; what is important about the results are, first, the direction of change and, second, the relative magnitude of impact (relative to the size of the change in the policy variable).

A further expenditure item shown earlier to have contributed to high and rising public-sector deficits was subsidies. It is not possible to isolate the effects of either changes in subsidies or of income tax rates on the size of the deficit. In the model, parastatal subsidies are not explicit, and parastatals are part of the productive sector and not the state sector. Taxes on income are also not included: the tax rates explicitly included in the model are profits and indirect taxes.

6.3.1 External macroeconomic factors

Table 19 records the percentage-point deviations (as a proportion of GDP) of counterfactual deficits from actual deficits for experiments 1 to 3.

Table 19
The deficit-to-GDP ratio: deviations from the reference path in percentage points

	1981	1982	1983	1984	1985	1986	1987	1988
Smooth agric. growth	0.00	-0.59	-1.98	-0.71	0.26	0.00	-0.95	0.00
Stable terms of trade	0.30	0.00	0.07	-0.45	0.00	0.00	-0.48	-0.20
Depreciation	0.00	-0.10	-0.17	-0.22	-0.23	-0.20	-0.32	-0.22
(Actual ratio)	6.93	15.77	17.15	14.69	13.76	12.47	17.18	18.86

Notes: A negative entry shows an improvement in the fiscal position (a reduction in the relative size of the deficit). The deficit is defined as the difference between revenue and expenditure, and excludes other general government income and financing.

Experiment 1: Smooth agricultural growth

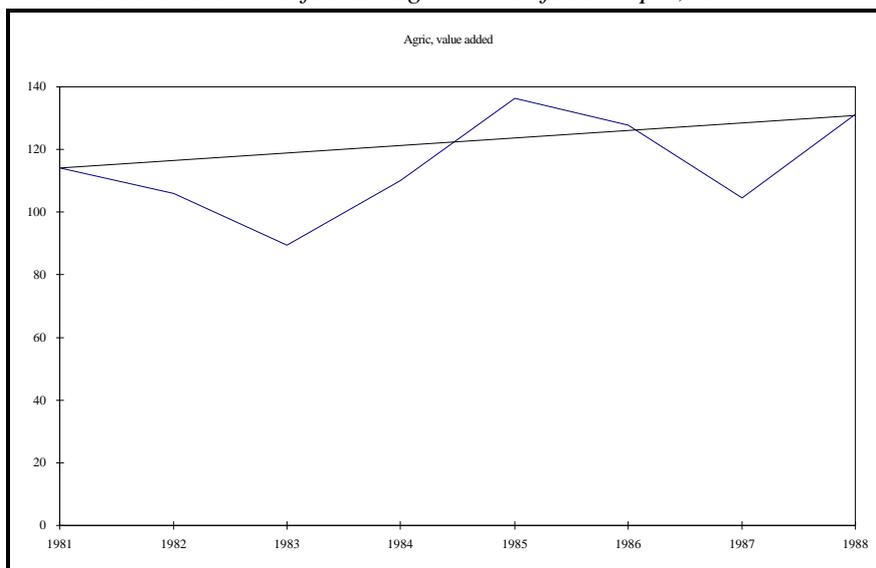
Agricultural output grew at an average annual rate of 2.7 per cent during the 1980s – food output at 1.5 per cent. There were, however, strong fluctuations in this growth. In order to assess the

³⁵ Expenditure taxes need not be regressive, because rich people consume many goods and services not consumed by the poor. The extent of regressivity depends both on the tax and on the exclusions from the tax base.

effect of changes in food agricultural output on the relative size of the budget deficit, stable output growth is assumed, and the same overall growth is smoothed over the period 1981–1988.³⁶ Clearly, the size of the deficit at the beginning and end of the period will be unchanged from the reference path, because counterfactual estimates equal the actual outcomes. Figure 6 plots the paths of actual and assumed agricultural food output. During the 1980s, severe droughts were experienced in 1982–83 and in 1987, reducing the output of the agricultural sector in these years.

In 1982–84 and in 1987 food output growth is higher in the experiment than it was in reality. This improves the government’s fiscal position, reducing the deficit by as much as two per cent of GDP in 1983 and one per cent in 1987. The higher agricultural food output reduces net food imports. This both reduces government expenditure associated with drought relief, and allows greater allocations of foreign exchange to rationed sectors. Output – and the tax take – is therefore higher in all sectors in the experiment. By contrast, in 1985 food output is lower in the experiment than in reality, and the fiscal deficit is a quarter of a percentage point of GDP larger than in the reference path: government spending on food imports is higher, and foreign exchange constraints restrict output and tax revenue in rationed sectors.

Figure 6
Actual and counterfactual agricultural food output, 1980=100



The finding has implications for the monitoring of Zimbabwe’s compliance with conditionality: although neither a full set of national accounts data nor a CGE model is available for the severe drought of 1991–92, it is probable that the worsening deficit over this period was at least in part a result of increased spending on famine relief as well as of lower tax revenues from agriculturally based production.³⁷ The policy implication is that the government should save the additional revenue in years of bumper harvests for smoothing price increases in food in years of drought.

³⁶ In terms of the model’s notation (Appendix 1), XB_1 was assumed to grow smoothly.

³⁷ The World Bank estimated that the 1991/92 drought would add to the central government budget an amount equivalent to 5 per cent of GDP in fiscal year 1991/92 and 10 per cent of GDP in 1992/93 [interviews].

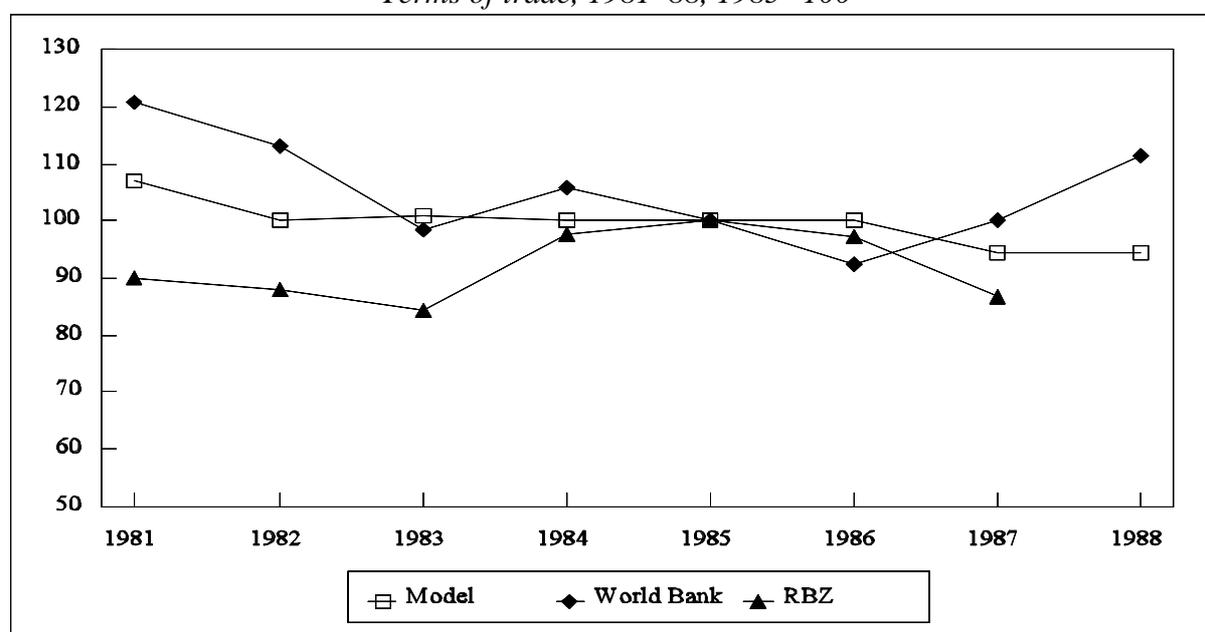
Experiment 2: Stable terms of trade

Droughts have been the most significant external shock to the economy; neither fluctuations in the terms of trade, nor exchange-rate overvaluation had an effect of similar magnitude on the deterioration in the fiscal position.

In the model all export prices and all import prices are calibrated together, so the terms of trade are a simple ratio of the two price series. The calculated terms of trade used in the model differ from published series, which themselves differ from one another. The three series (in 1985 prices) are plotted in Figure 7 for the period covered by the model. The terms of trade used in the model fall from 1981 to 1984, and are then relatively stable until a sharp deterioration in 1987. The World Bank and Reserve Bank of Zimbabwe (RBZ) ratios, although different in magnitude, move in the same direction from 1981 to 1984, but in opposite directions thereafter. They show a deterioration from 1981 to 1983 and some improvement in 1984. The World Bank then reports falling terms of trade in 1985 and 1986, followed by a sharp improvement; the central bank reports a very small improvement in 1985 and a deterioration in 1986 and 1987. The RBZ series ends in November 1987.

Whatever actually happened to the terms of trade is not of direct interest to the modelling exercise. Given the structure of the model, the question is: what happened to the size of the budget deficit if changes in the foreign prices of exports had been equal to changes in the prices of imports throughout the period? The general trend in the reference-path terms of trade was a fall at the beginning and end of the period (in 1981–82 and in 1986–87); otherwise the terms of trade are almost stable; in the counterfactual, constant terms of trade are assumed for the entire period.

Figure 7
Terms of trade, 1981–88, 1985=100



The results show that terms of trade lower than the reference path in 1981 generated a budget deficit which was 0.3 of a percentage point of GDP greater than the actual (Table 19). When the

simulated terms of trade were higher than the reference path in 1987 and 1988, the deficit was smaller by nearly half a percentage point of GDP in 1987 and 0.2 per cent of GDP in 1988. This appears to suggest that fluctuations in the terms of trade have some impact on the relative size of the deficit – more specifically that a rise in the relative prices of imports increases the size of the budget deficit as a proportion of GDP. The deterioration (improvement) in real income affects the relative size of the deficit in two ways: (i) by lowering (raising) revenue from profits' tax; and (ii) by increasing (reducing) the value of government spending on imports. The lower (higher) profits are generated by both poorer (better) export earnings and by the tightening (loosening) of the foreign-exchange constraint, which affects output in all sectors.

However, in 1984, the simulated terms of trade did not deviate substantially from the reference path, and yet the terms-of-trade stability in the experiment was sufficient to generate a deficit which was 0.5 per cent of GDP smaller than the baseline deficit. In 1984 import controls were tightened, reducing foreign-exchange availability, and the government temporarily cut its spending, as an attempt was made to adjust to the rapidly deteriorating external debt position. The model's (baseline) GDP fell 2.0 per cent; the baseline budget deficit also contracted, by 16.0 per cent. The terms of trade used to calculate the baseline deficit fell by 0.9 per cent, returning to the ratio recorded for 1982. With stable terms of trade in the experiment, the deficit contracted even further, by 17.3 per cent. The stability in the terms of trade improved both export performance and allowed higher imports, completely offsetting the effect of the decline in GDP on tax revenue observed in the reference path. At the same time, stability in relative import prices in the experiment allowed government spending to fall even more than in the baseline.

The precise effect of changes in the terms of trade therefore depends on other conditions in the economy. The government has frequently blamed economic deterioration, and its own revenue difficulties, on what is viewed as exploitative price-setting in international commodity markets. Simulations show that worsening of the terms of trade generally exacerbates the fiscal position, primarily through the effects of higher relative import prices and lower profits' tax revenue. It is likely that the actual magnitude of the outcomes varies according to the economy's ability to respond to changing incentives.

Experiment 3: Nominal devaluation of one per cent each year

Using decomposition analysis for the period 1982 to 1989, Morandé and Schmidt-Hebbel [1994:471] report that a one per cent real depreciation reduces the deficit by 0.06 of a percentage point of GDP. They explain the improvement as the effect of higher tax revenue, boosted by the depreciation, which more than offsets the higher foreign debt-service payments.

These results are confirmed by the results of experiment 3 (Table 19), which show the effects (with import regulations in place) of an annual one per cent nominal devaluation from 1982, accumulating to a total of 7.2 per cent by 1988. The deviation of the relative size of the counterfactual budget deficit from the reference path increases almost every year. The one per cent devaluation in 1982 reduces the deficit by 0.1 of a percentage point of GDP. Thereafter, although the marginal improvements decline, cumulatively the deficit as a proportion of GDP shrinks further in almost every year, further annual one per cent nominal devaluations reducing the relative size of the deficit by between one-sixth and one-third of a percentage point of GDP. In other words, during the 1980s a steady, small devaluation would have improved the fiscal

position, without necessarily adding substantially to the debt-service burden (an effect not picked up by the model).

The devaluation is expansionary, raising the rate of growth of GDP, and thereby tax revenue. Because of assumed nominal rigidities in unskilled wages, devaluation reduces the unskilled real wage in all sectors. Moreover, devaluation raises the price level in the exportables sector, which increases profits. In 1988, for example, the cumulative devaluation raises production in the exportables sector by 4.2 per cent above the reference path. Export earnings are 4.5 per cent higher than the reference path. This relieves the foreign-exchange – and therefore the supply – constraint on rationed sectors, both tradables and non-tradables. Output expands in all sectors (although growth in the production of tradables exceeds that of non-tradables); overall GDP is 2.1 per cent higher than its reference path. The higher output in all sectors raises profits. The result is increased government revenue from both profits tax and indirect tax, with tax rates unchanged. Revenue is further augmented by the price effects of devaluation, which raises the CPI by an average of 0.6 per cent a year above the reference path.

The negative effects of higher prices on government spending are partially offset by the fall in the real wage of unskilled labour. Increased expenditure is more than compensated for by the rise in revenue.

Expansionary devaluation improves the deficit when the economic growth is constrained by the availability of foreign exchange. It is possible that the successive large nominal devaluations under ESAP may not have had a similarly beneficial effect on the relative size of the deficit. With liberalisation of the foreign-exchange market, Zimbabwe's economy is no longer characterised by shortages of foreign exchange. On the other hand, a considerable external debt may mean that large devaluations exacerbate the debt-service situation, increasing government interest obligations relative to domestic output.

The conclusion of this section is that events outside the control of fiscal authorities tended to worsen the government's fiscal position. Droughts unambiguously raise the size of the deficit relative to GDP, although the effect is temporary, because the situation improves when agricultural output recovers. The effects of negative terms-of-trade shocks are generally to worsen the fiscal position, although the magnitude of the impact depends on other economic factors. Finally, had the government in the 1980s permitted a steady depreciation of the Zimbabwe dollar, rather than depending on import rationing to maintain external balance, the economy would have grown faster, and the tax take would have been higher, with the fiscal position improving cumulatively.

6.3.2 Fiscal policy variables

This sub-section considers the effects of marginal changes in fiscal policy variables on the size of the deficit only. The general equilibrium effects of a more cautious fiscal approach are dealt with in the following sub-section. Table 20 records the percentage-point deviations (as a proportion of GDP) of counterfactual deficits from actual deficits for experiments 4 to 6.

Table 20
The deficit-to-GDP ratio: deviations from the reference path in percentage points

	1981	1982	1983	1984	1985	1986	1987	1988
10% less unskilled employment	-0.23	-0.34	-0.28	-0.33	-0.32	-0.30	-0.26	-0.36
10% less total employment	-0.43	-0.58	-0.48	-0.54	-0.53	-0.51	-0.58	-0.66
10% less construction	0.23	-0.04	-0.02	-0.03	-0.02	-0.01	-0.03	-0.02
1% higher indirect tax	-0.60	-0.80	-0.73	-0.71	-0.69	-0.70	-0.69	-0.80
1% higher profits tax	-0.15	-0.14	-0.14	-0.19	-0.16	-0.31	-0.15	-0.17
(Actual ratio	6.93	15.77	17.15	14.69	13.76	12.47	17.18	18.86)

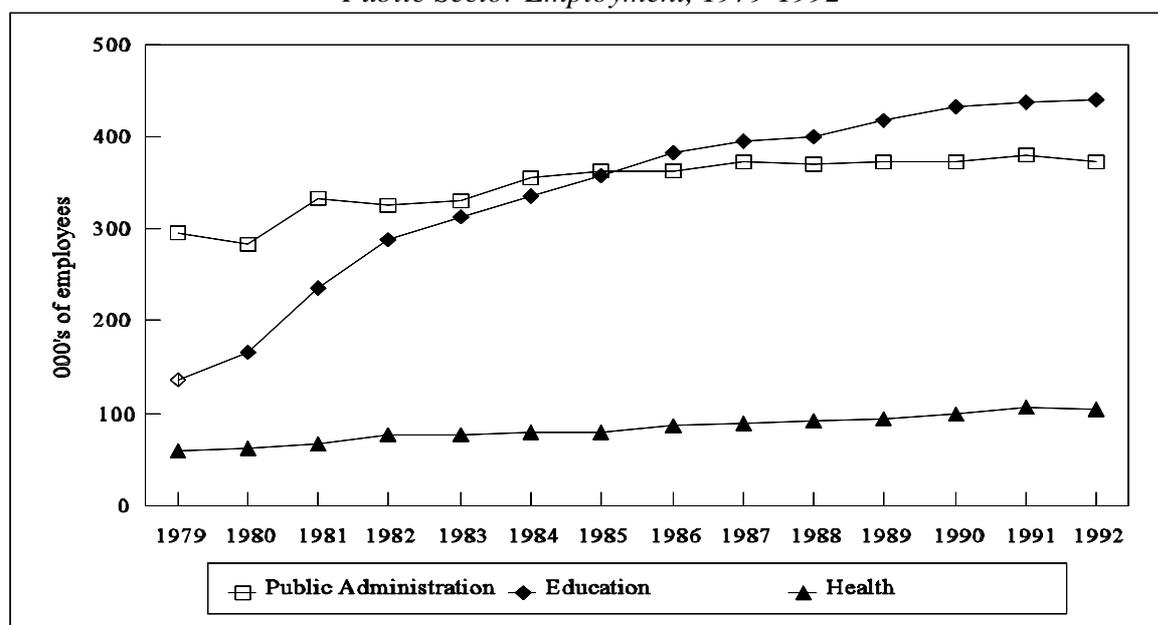
Notes: A negative entry shows an improvement in the fiscal position (a reduction in the relative size of the deficit). The deficit is defined as the difference between revenue and expenditure, and excludes other general government income and financing.

Experiment 4: Ten per cent reduction in public-sector employment

In experiment 4 government employment is reduced by 10 per cent: counterfactual employment is 10 per cent below actual employment in each year during the period 1981 to 1988. In the model, the government hires two different types of workers, skilled and unskilled, each group defined by its wage level: the top third in the wage distribution is skilled; the remainder are unskilled. Most teachers and nurses, for example, fall into the category of unskilled workers.

Experiment 4a involves a 10 per cent cut in unskilled employment, achieved either by a 10 per cent contraction in the number of lower-paid people employed, or, since the nominal unskilled wages is exogenous, by a ten per cent cut in unskilled wages. This experiment captures the financial implications for government of a slower expansion in the number of nurses and teachers employed.³⁸ Employment in education rose meteorically after independence, exceeding the number employed in public administration after 1985 (Figure 8).

Figure 8
Public Sector Employment, 1979-1992



³⁸ It is implicitly assumed that the demand for nurses and teachers does not affect their wages in the short run, pushing them into the skilled wage category.

In pursuit of its affirmative-action programme, the government recruited lesser-skilled blacks, without sacking experienced white civil servants (although many whites took generous severance packages and left). In terms of the model, reducing unproductive unskilled employment would have the same real effects as employing fewer educators, because there are no feedback effects of the investment in human capital. Because the substitution of less experienced for more experienced teachers (and other civil servants) reduced the quality of services, this is not necessarily an unreasonable assumption.

In most cases, an expansion in the provision of social services implies an increase in both skilled and unskilled employment. Experiment 4b therefore reports the results of an equiproportionate reduction in low and highly paid employment, with a fall in total employment of ten per cent.

Reducing the size of the government wage bill unambiguously improves the government's fiscal position. However, decreasing the number of skilled (highly paid) workers in the same proportion as the number of unskilled (lower-paid) workers has a greater effect on the wage bill and, consequently, on the size of the deficit. In experiment 4a, each percentage point cutback in unskilled employment reduces the deficit by between 0.02 and 0.04 of a percentage point of GDP. In experiment 4b, the effect is almost doubled: the relative deficit falls by between 0.04 and 0.07 of a percentage point for each one per cent cutback in total employment.

In their decomposition of fiscal deficits, Morandé and Schmidt-Hebbel [1994:471] find that the impact of a change in the real wage bill is even greater: a one per cent increase in the real wage bill caused the relative public-sector deficit to rise by 0.14 of a percentage point. The difference arises from three possible sources. First, their definition of the public sector includes non-financial public enterprises. Many of these are inefficient and loss-making. In addition to other purposes, the expansion of the parastatal sector was also intended to fulfil an employment objective, and public enterprises include substantial numbers of unproductive workers on their payrolls, who would add significantly to marginal costs with no addition to revenue. Second, the methodology used in each analysis is different, and the variation in magnitude is a mathematical phenomenon. What is important is that the direction of change is the same in both studies. Third, the period analysed in each study differs marginally: the CGE model is calibrated for the period 1981 to 1988; the decomposition analysis was done for 1982 to 1989.

Experiment 5: Ten per cent reduction in government purchases of non-tradable capital goods
Commencing in 1982 the government spent a large proportion of the commodity-export windfall income on a construction boom, which continued after commodity prices had fallen. In experiment 5, counterfactual government spending on non-tradable capital goods is 10 per cent below the reference path. The impact on the relative size of the deficit is recorded in Table 20.

The effects of the construction boom on the deficit are negligible, although the counterfactual deficits from 1982 are consistently smaller than the actual deficits as a proportion of GDP (Table 20). Because the model analyses only the real effects of public-sector construction activity, a fiscal contraction in which government construction is reduced is felt via a fall in the demand for the output of the non-tradable capital goods sector, with offsetting tax revenue implications. There are no trade-offs between government purchases of non-tradable capital goods and other assets, or of a possible crowding-in of private-sector activity as resources are shifted towards the private

sector.³⁹ Moreover, the model does not capture the import- and skilled labour-intensity of construction activity in Africa. Nor does it include construction by parastatals as part of public-sector construction. The CGE analysis therefore possibly understates the real effects of the public-sector construction boom on Zimbabwe's deficit in the 1980s.

Experiment 6: One percentage point increase in tax rates

During the 1980s the fiscal authorities relied increasingly on income tax and customs and excise duties to raise revenue, and on forced savings from the private sector to finance the deficit. It was suggested earlier that more revenue could have been raised from higher corporate taxes or from raising indirect tax rates. Increases in both sources of revenue were avoided for political reasons: the corporate sector argued that it was already overtaxed and that increasing rates would have disincentive effects on production; and indirect taxation may be regressive and was kept as low as possible for welfare reasons.

The effects on the size of the deficit of increasing the rate of profits tax or indirect tax (which includes tariffs) were tested in experiment 6. Both rates were raised one percentage point above the reference path. The model captures only the demand effect of taxation; taxes do not affect supply directly.

As expected, the deficit is smaller when tax rates are higher, although the impact of raising the indirect tax rate by one percentage point has a significantly greater effect. A one percentage point increase in profits tax reduces the relative deficit by between 0.14 and 0.19 per cent of GDP each year (except in 1986 when the effect is slightly greater). By contrast, raising the indirect tax rate one percentage point above the reference path causes the deficit to fall by between 0.60 and 0.80 percentage points of GDP (Table 20). An increase in the indirect tax rate raises more revenue than higher taxes on profits.

Table 20 provides a comparison of the effects on fiscal deficits of changes in different policy instruments. A one percentage point increase in indirect tax rates reduces the deficit more than any other change. This supports complementary evidence provided by Morandé and Schmidt-Hebbel [1994:470-71] who show that changes in the tax regime that lead to a higher tax burden (or impose stricter controls on evasion) tend to reduce the public-sector deficit significantly. A cut in total employment is also effective if it includes employing fewer high-wage staff, provided that service delivery is not adversely affected. However, the civil service needs to be reduced by more than 10 per cent to achieve the same effect on the deficit as a one percentage point increase in the rate of indirect tax, *ceteris paribus*.

The general equilibrium effects of changes in fiscal policy variables are reported in the following sub-section.

³⁹ The impact of increased construction by the state is ambiguous *a priori*, as it is equally possible for more government investment to raise the productivity of private-sector capital, and so crowd in private investment.

6.4 Macroeconomic effects of changes in fiscal policy variables

Earlier in this chapter it was argued that government spending has absorbed private-sector resources, both by increasing the income tax burden via fiscal drag, and by the effective forcing of private saving into non-inflationary deficit financing through the mechanisms of statutory liquid asset requirements and import rationing. Although the rate of growth of GDP was higher and the rate of inflation lower than in many other lower middle-income economies, the result of large and growing fiscal deficits was less private investment and slower economic growth than would otherwise have occurred. Moreover, *per capita* consumption fell after the post-independence boom.

These arguments are now set up as hypotheses, and are tested using the CGE model.⁴⁰ Experiments 4 to 6 above are run again, and the effects of changes in some fiscal variables on GDP, on inflation, on private consumption, on exports (as an indicator of foreign-exchange availability), and on the share of low-income earners in total income are assessed. The effects of a ten per cent reduction in government spending on non-tradable capital goods (mainly construction) were found to be negligible, and are not reported.

Experiment 4: Ten per cent reduction in public-sector employment

The results of the experiment in which government employment is reduced by 10 per cent are recorded in Table 21. Unskilled employment (or the nominal unskilled wage) is cut (4a), and total employment is cut (4b).

Table 21
Economic effects of fiscal contraction: ten per cent reduction in government employment
Deviations from the reference path

	GDP growth		Inflation		Exports ^a		Consumption ^b		Low income share		
	lowW ^c	total	lowW ^c	total	lowW ^c	total	lowW ^c	total	lowW ^c	total	base ^d
	(% points)		(% points)		%	%	%	%	(% points)		%GDP
1981	--	--	--	--	0.6	1.6	-0.4	-0.4	0.0	0.7	64.6
1982	0.6	0.6	0.6	1.6	0.9	2.8	-0.1	0.4	0.0	0.7	65.9
1983	0.0	-0.2	0.0	-0.2	0.7	2.2	-0.2	0.1	0.0	0.7	61.7
1984	0.0	-0.1	0.0	0.5	0.3	0.9	-0.2	0.1	-0.1	0.2	59.9
1985	0.0	0.1	-0.1	-0.2	0.4	1.2	-0.2	0.1	-0.1	0.4	63.3
1986	0.1	0.2	0.1	0.2	0.4	1.4	0.1	0.4	-0.1	0.4	65.2
1987	-0.5	-0.1	0.1	0.3	0.4	1.2	-0.2	0.3	-0.1	0.4	64.0
1988	0.6	0.3	0.2	0.1	0.5	1.7	-0.1	0.7	-0.1	0.5	62.5

Notes: (a) Exports = exports of the exportables sector plus (exogenous) exports of services
(b) Consumption = *private* consumption
© lowW = low wage or unskilled employment
(d) base = value in the reference path

⁴⁰ Investment is exogenously determined in the model, so the effects on private investment cannot be tested. Furthermore, there is no financial sector, so it is not possible to examine the effects of alternative forms of deficit financing on private-sector economic activity.

In both simulations the effect on the rate of growth of GDP is pro-cyclical. The high growth years in the period covered by the model are 1982, 1985 and 1988; low or negative growth occurred in 1983, 1984 and 1987. A fall in the government's wage bill raises the growth rate by over half a percentage point in both 1982 and 1988 (in 1988 reducing skilled as well as unskilled employment causes a smaller acceleration in growth); in 1983, 1984 and 1987 the fiscal contraction tends to deepen the recession, especially if the wage bill is reduced by hiring fewer skilled (high-wage) workers.

During an upswing, if fewer skilled workers are employed by the government, the skilled labour constraint is released: because in the model skilled labour is in short supply, the wage rate adjusts to clear the market, and more skilled workers are employed in the productive sectors. This enables the productive sectors to increase their output. The expansionary effect is reinforced by growth in the exportables production, some of which is exported, releasing the foreign exchange constraint and allowing a further increment in total production

The higher output which accompanies the employment of a greater proportion of skilled workers in the productive sectors permits higher aggregate private consumption. It also raises the demand for unskilled workers in the productive sectors, raising the proportion of income which accrues to low-income earners. The release of resources by the public sector for employment in the private sector therefore raises welfare.

During a downswing wage adjustments which clear the skilled labour market reduce personal incomes. This diminishes the positive effect on private consumption and on the complementary demand for unskilled labour. Hence it diminishes the improvement in the low-income share of total income, which remains positive however.

If the government maintains its full complement of skilled workers, but employs less unskilled labour, the resulting additional unemployment reduces both aggregate private consumption and, in some years, the low-wage share in total income, even when GDP growth is accelerated. The effects are, however, very small: aggregate private consumption falls by less than half a per cent, and the share of low-income earners remains unchanged or falls by one-tenth of a percentage point.

The effects of a reduction in government employment, particularly skilled employment, tend to raise the rate of inflation. This is a labour-market effect, as the employment of more workers in the productive sectors raises marginal costs, which, in turn, raises prices.⁴¹ The effect is greatest in 1982 when the minimum wage (and therefore the unskilled wage) was high relative to other prices, because the government raised minimum wages after independence. Inflation was allowed to erode the real wage during the 1980s, so that increased demand for labour would have raised marginal costs at a decreasing rate between 1982 and 1988.

⁴¹ Price controls were administered on the basis of a fixed mark-up over (marginal) costs.

Experiment 6: One percentage point increase in tax rates

The effects of a one percentage point increase in tax rates are reported in Table 22. Experiment 6a involved an increase in the rate of tax on profits. The effect on the size of the deficit was found to be small; the impacts on the real economy are also negligible.

Table 22
Economic effects of fiscal contraction: one percentage point increase in tax rates
Deviations from the reference path

	GDP growth		Inflation		Exports ^a		Consumption ^b		Low income share	
	profits	indirect	profits	indirect	profits	indirect	profits	indirect	profits	indirect
	(% points)		(% points)		%	%	%	%	%	%
1981	--	--	--	--	0.3	1.3	-0.2	-1.3	0.1	1.1
1982	0.1	0.3	0.4	1.4	0.3	1.6	0.0	-0.9	0.1	1.0
1983	0.0	-0.1	-0.1	-0.2	0.3	1.4	-0.1	-1.0	0.1	1.0
1984	0.0	0.2	0.1	0.7	0.1	0.4	-0.1	-0.9	0.0	0.5
1985	0.0	0.0	0.0	-0.1	0.1	0.5	-0.1	-0.9	0.0	0.6
1986	0.0	0.1	0.0	0.0	0.1	0.6	0.0	-0.9	0.0	0.6
1987	0.0	0.0	0.0	0.1	0.1	0.4	0.0	-0.9	0.0	0.6
1988	0.0	0.1	0.1	0.5	0.1	0.4	0.0	-0.8	0.0	0.6

Notes: (a) Exports = exports of the exportables sector plus (exogenous) exports of services
(b) Consumption = *private* consumption

Higher indirect taxation (experiment 6b), which was found to be most effective in reducing the size of the deficit relative to GDP, has only a marginal, but positive, effect on GDP growth. The impacts on the economy of raising the rate of indirect tax feed through via the influence of higher prices in the non-tradable consumer goods sector (including services), where price controls do not operate. In fiscal year 1981/82 the indirect tax regime was changed, and general sales tax was raised, whereafter it was more stable. The experiment amplifies the effect of the change of tax regime in 1982, when its influence on the rate of inflation is greatest.

The increase in prices of non-tradable consumer goods caused by raising indirect taxation raises supply in this sector and causes private consumption to fall, by around one per cent annually. The impact on the poor is offset by a redistribution in favour of low-income earners of between half and one percentage point. The reason for the redistribution is the direct reduction in profit income caused by raising indirect taxes, which, in the model, reduces the share of high-income earners.

The simultaneous increase in income and fall in private consumption means that domestic production exceeds absorption. The surplus is exported. In this case the higher exports do not have the effect of raising output further, because of the domestic demand constraint.

6.5 Conclusions

A real-effects CGE model shows that fiscal variables had a much smaller impact on the rate of growth of the economy in the 1980s than would have been predicted from the discussion in the earlier sections of this chapter. The model shows that, had employment been reduced, the effect would have been to amplify, but only marginally, fluctuations in the rate of growth of GDP. The simulated effect is dependent on the rate of private-sector absorption of the additional workers,

especially skilled workers. Raising tax rates had no effect on growth – which would imply that more revenue could have been raised without damaging the rate of growth of the economy.

There are four possible reasons why the effects on the economic growth rate are so unexpectedly small. First, public-sector dissaving may not have reduced the economic growth rate in Zimbabwe.

Second, the exclusion of financial sector effects and the exogenous determination of investment assumed in the model limits the ability to analyse private-sector demand and output response to changes in the size of the government deficit. Because monetary and financial policy has been used to transfer private surpluses to the public sector, the large deficit financing needs are possibly inadequately captured in the real-effects model. This probably accounts, in part, for the muted impacts recorded by the model.

Third, it is also probable that introducing such small changes in variables is responsible for generating small results. It is significant that in almost all cases a smaller deficit was associated with an increase in the rate of growth of GDP, albeit a small increase. It was argued earlier that the draining of private surpluses by government slowed the economic growth rate, but it did not cause the economy to contract. The modelling exercise confirms this argument.

Finally, the structure of the model, which aims specifically to capture the effects of economic controls may, in fact, highlight the very problems which caused Zimbabwe to grow slowly over the 1980s: tight controls over economic activity. It is possible that the deficit did not emerge as a constraint on growth because controls were hampering economic growth, and only once the controls were lifted would the public-sector absorption of private savings emerge as a binding constraint.

The variable with significant influence on overall growth was agricultural output. This is not surprising as the effects are well captured by the structure of the model. The result is confirmed by anecdotal evidence from both industrialists and bankers, who repeatedly affirm that weather conditions drive Zimbabwe's economic growth [interviews]. This implies that the government should give urgent attention to management of the country's water resources, a point which is discussed in the following section.

The model shows the budget deficit to have had an unambiguously negative impact on exports. During the 1980s the scarcity of foreign exchange reduced output, because of the economy's dependence on imported intermediate goods. This was most affected by the overvaluation of the currency, which deepened the anti-export bias created by the protective trade regime. Government spending on non-tradable goods and services exacerbated the bias against the production of tradables, especially exportables. Moreover, reducing the deficit, either by lower government employment or higher tax rates, was shown by the simulations to have positive results for export performance. These effects are all well captured by the model, which also shows that nominal devaluation of the currency would have both raised the rate of growth of the economy and reduced the size of the deficit relative to GDP.

The other important point to emerge from the simulations is that private welfare would have improved with a smaller budget deficit, *ceteris paribus*. A reduction in the government wage bill, particularly if fewer high-wage workers were employed, was shown to raise both aggregate

private consumption and the share of low-income earners in total income. Higher indirect tax rates would also have increased the low-income share: a one percentage point increase in the tax rate raised the share of low-income earners by around one percentage point of total income – which means that, at least according to the structure of the model, indirect taxes in Zimbabwe do not appear to be regressive. On the other hand, aggregate private consumption fell when indirect taxes were raised, because of a reduction in profit incomes and therefore in consumption by high-wage earners. In contrast, raising the rate of tax on profits had a negligible effect on aggregate private consumption or on the low-income share.

The findings of the model are limited by its structure. Where Zimbabwe's economic relationships are well captured by the equations – as in the cases of the importance of access to foreign exchange on production in any given year, and the central importance of agricultural output – the results are plausible. Where important markets or feedback effects are missing, the impacts are weaker, although the direction of change tends to be as expected.

7. Public expenditure, policy objectives and economic performance

A fundamental macroeconomic problem in Zimbabwe in the 1980s was that the sum of what the new government wanted and planned to do was greater than the resources available. This was probably inevitable, but the government's difficulty in discerning the macroeconomic limitations on new initiatives was greatly increased by the unusual circumstances of the first two years: a commodity boom; promises of more aid than eventually arrived; expectations of a peace dividend which did not come; initial high rates of economic growth; and initial low foreign debt. All of these circumstances created unrealistic expectations, concealing the probability that the government's plans would be impossible to finance.

The government was (predictably) slow to react to expectations being disappointed. This created a debt problem. Drought and terms-of-trade shocks made things worse. Drought was bound to occur periodically; only the timing was unpredictable. No allowance was made for the likelihood of these shocks.

The delayed policy response had high economic costs. Even the very real achievement in extending primary health and education to a hugely higher proportion of the population was endangered as resource constraints reduced the quality of services. However, success in protecting the rural population from the effects of drought was apparently sufficient to sustain popular support for the government, at least in the rural areas, in spite of very little land redistribution, the expectation of which had been the major reason for rural support during the war.

There was a growing divergence between planned government spending and actual revenue. It was difficult to increase revenue, because (i) there were political constraints on raising income and corporate tax rates in an economy where rates were already considered to be high; and (ii) there were believed to be welfare constraints on raising indirect taxes. Fiscal drag enabled the government to raise an increasing proportion of its revenue from personal income tax. Increasingly, customs and excise duties were relied on to finance the growing state expenditure.

Subsidies were a large – and growing – item of spending, exceeding the wage bill in at least half the years between 1980 and 1990.⁴² One source of large subsidies was price controls on agricultural commodities. These became unsustainable with inflation; yet, because they were regarded as a political right, they were difficult to remove, and their maintenance became an increasing drain on state finances, enlarging government deficits. Nationalisation of non-profitable key industries added to the huge expenditure on subsidies, with similar results. With nationalisation there was the problem of reduced competition and resource misallocation as scarce resources (capital and foreign exchange) were pushed their way.

In real terms the public-sector wage bill grew faster than GDP almost every year, in spite of the decline in real wages. Employment in all departments rose, but the increase in numbers of teachers employed was very rapid. A further problem was that government projects were undertaken without adequate provision for financing future recurrent costs. This, together with pressure for the extension and maintenance of state projects, especially social services, meant that the government was unwilling (or politically unable) to engage in fiscal adjustment, so the burden of adjustment was pushed on to the monetary authorities. This problem has persisted during the ESAP period, for essentially the same reasons.

Dependence on borrowing to finance government spending increased. When the anticipated foreign assistance was not forthcoming, Zimbabwe borrowed abroad on commercial terms. Foreign borrowing increased the debt service burden. The worsening position on both capital and current accounts generated foreign exchange shortages which hampered production. Forced saving by the private sector enabled greater domestic borrowing by the government, but this reduced private consumption. Uncertainty caused by the growing public-sector debt reduced private investment. The result was a further reduction in the growth rate.

The variable with most significant influence on overall growth is agricultural output. This implies that the government should give urgent attention to management of the country's water resources. The SADC protocol signed in August 1995 in which SADC member states agreed jointly to manage and share the region's water should pave the way for imports of water from better endowed countries in the region. There is little the government can do when droughts affect the whole region. However, some droughts are localised, and saving and storing domestic water, together with prompt action on importing water during local shortages, should smooth fluctuations in the availability of water. Furthermore, interruptions to the supply of hydro-electric power during droughts is damaging to the output of the manufacturing sector. Ensuring an uninterrupted supply of electricity by, for example, importing some of South Africa's surplus, will make a marked improvement to conditions facing manufacturers in Zimbabwe.

The maintenance of a competitive exchange rate is important for overall macroeconomic performance. It is a truism to say that this needs to be well managed, but much of the ESAP period has been characterised by incremental overvaluation followed by sharp corrections. Regular nominal devaluation – or allowing greater market determination of the rate – would be more appropriate.

⁴² As mentioned earlier in the text, it was not possible to analyse these using the CGE model, because they were not explicitly included in government spending and parastatals were aggregated with the productive and not the government sector.

The size of the fiscal deficit remains a central issue in Zimbabwe. It was argued above that the fiscal stance is not consistent with other macroeconomic policies. This undermined post-independence initiatives in the 1980s, and it is undermining structural adjustment in the 1990s. Moreover, a reduction in the deficit, by raising taxes and reducing the size of the civil service, is central to an improvement in welfare as well as to the maintenance of macroeconomic balance. Even though various sectoral policies may in themselves be desirable, they are not consistent in that they are unsustainable in aggregate. Some of the policies implemented after independence and aimed at redistributing resources or alleviating poverty were unsuccessful, or had perverse effects. An emphasis on equity without sufficient regard for efficiency – and consistency – can have perverse effects on both equity and efficiency. The policies pursued created distortions which pushed the economy towards macroeconomic instability. In Zimbabwe the growth of government became a drain on the economy, rather than a facilitator of economic growth and development.

Appendix A: The Model

$$X_i = \sum_{j=1}^5 a_{ij} \cdot X_j + C_i + G_i + J_i + E_i - M_i + DS_i \quad (i=1-5) \quad (1)$$

$$X_1 = XB_1 \quad (2)$$

$$P_2 = \frac{(1+t_2)(1+\tau_2)}{1-(1+t_2)(1+\tau_2)a_{22}} [a_{12} \cdot P_1 + a_{32} \cdot P_3 + a_{42} \cdot P_4 + a_{52} \cdot P_5 + q_2 \cdot b_2] \quad (3)$$

$$X_i = \frac{1}{1-n_i} \left([\mu_{1i} \cdot L_i^{-\frac{1-\eta_i}{\eta_i}} + \mu_{2i} (\kappa_i \cdot K_i)^{-\frac{1-\eta_i}{\eta_i}}]^{-\frac{\eta_i}{1-\eta_i}} \right) \quad (i=3-5) \quad (4)$$

$$N_i = n_i \cdot X_i \quad (i=3-5) \quad (5)$$

$$H_4 = \epsilon_{14}^{\delta_4} \left(\frac{e \cdot P_{04}^*}{MC_{N4}} \right)^{-\delta_4} N_4 \quad (6)$$

$$DI_4 = \epsilon_{24}^{\delta_4} \left(\frac{P_{DI4}}{MC_{N4}} \right)^{-\delta_4} N_4 \quad (7)$$

$$N_i = [\epsilon_{1i}^{\frac{1-\delta_i}{\delta_i}} H_i^{-\frac{1-\delta_i}{\delta_i}} + \epsilon_{2i}^{\frac{1-\delta_i}{\delta_i}} DI_i^{-\frac{1-\delta_i}{\delta_i}}]^{-\frac{\delta_i}{1-\delta_i}} \quad (i=3,5) \quad (8)$$

$$P_i = (1+\tau_i) MC_i \quad (i=3-5) \quad (9)$$

$$MC_{N4} = [\epsilon_{14}^{\delta_4} (e \cdot P_{04}^*)^{1-\delta_4} + \epsilon_{24}^{\delta_4} P_{DI4}^{1-\delta_4}]^{\frac{1}{1-\delta_4}} \quad (10)$$

$$MC_i = n_i \cdot MC_{Ni} + (1-n_i) MC_{VAi} \quad (i=3-5) \quad (11)$$

$$P_4 = e \cdot P_4^* \quad (12)$$

$$MC_{VAi} = \frac{q_i}{\mu_{1i}} [\mu_{1i} \cdot L_i^{-\frac{1-\eta_i}{\eta_i}} + \mu_{2i} (\kappa_i \cdot K_i)^{-\frac{1-\eta_i}{\eta_i}}] \frac{1}{1-\eta_i} \cdot L_i^{\frac{1}{\eta_i}} \quad (i=3-5) \quad (13)$$

$$MC_{Ni} = \frac{P_{Dli}}{\epsilon_{2i}} [\epsilon_{1i} \cdot H_i^{-\frac{1-\delta_i}{\delta_i}} + \epsilon_{2i} \cdot DI_i^{-\frac{1-\delta_i}{\delta_i}}] \frac{1}{1-\delta_i} \cdot DI_i^{\frac{1}{\delta_i}} \quad (i=3,5) \quad (14)$$

$$P_{Dlj} = \sum_{i=1}^5 f_{ij} \cdot P_i \quad (j=3-5) \quad (15)$$

$$B_j = \sum_{i=1}^5 a_{ij} \cdot P_i + a_{0j} \cdot e \cdot P_{0j}^* + q_j \cdot b_j \quad (j=2-5) \quad (16)$$

$$A_{ij} = f_{ij} \cdot DI_j \quad (i=1-5, j=3-5) \quad (17)$$

$$a_{0j} = \frac{H_j}{X_j} \quad (j=3-5) \quad (18)$$

$$a_{ij} = \frac{A_{ij}}{X_j} \quad (i=1-5, j=3-5) \quad (19)$$

$$L_i = b_i \cdot X_i \quad (i=2-5) \quad (20)$$

$$q_i = [\alpha_i^{\sigma_i} \cdot w_{ui}^{1-\sigma_i} + \beta_i^{\sigma_i} \cdot w_s^{1-\sigma_i}]^{\frac{1}{1-\sigma_i}} \quad (i=2-5) \quad (21)$$

$$L_{ui} = \alpha_i^{\sigma_i} \left(\frac{w_{ui}}{q_i} \right)^{-\sigma_i} L_i \quad (i=2-5) \quad (22)$$

$$L_{si} = \beta_i^{\sigma_i} \left(\frac{w_s}{q_i} \right)^{-\sigma_i} L_i \quad (i=2-5) \quad (23)$$

$$L_u = \sum_{i=2}^5 L_{ui} + L_{ug} \quad (24)$$

$$L_s = \sum_{i=2}^5 L_{si} + L_{sg} \quad (25)$$

$$Y_a = P_1 \cdot X_1 \quad (26)$$

$$Y_u = \sum_{i=2}^5 w_{ui} \cdot L_{ui} + w_{ug} \cdot L_{ug} \quad (27)$$

$$Y_s = \sum_{i=2}^5 w_s \cdot L_{si} + w_s \cdot L_{sg} + NFPA \quad (28)$$

$$Y_z = \sum_{i=2}^5 P_i \cdot X_i - B_i \cdot X_i - \frac{t_i}{1+t_i} P_i \cdot X_i \quad (29)$$

$$D = (1-s_a)Y_a + (1-s_u)Y_u + (1-s_s)Y_s + (1-s_z)(1-t_z)Y_z \quad (30)$$

$$s_j = S \cdot s_j^* + \gamma_j \left(\frac{CIMP_D - CIMP_A}{CIMP_D} \right)^2 \quad (j=a, u, s, z) \quad (31)$$

$$CIMP_D = \frac{m_c}{e \cdot P_{0C}^*} (D - DB) \quad (32)$$

$$DB = \sum_{i=1}^5 P_i \cdot \theta_i \quad (33)$$

$$C_i = \theta_i + \frac{m_i}{(1-m_c)P_i} (D - DB - e \cdot P_{0c}^* \cdot CIMP_A) \quad (i=1-5) \quad (34)$$

$$GREV = t_z \cdot Y_z + T^{IND} \quad (35)$$

$$T^{IND} = \sum_{i=1}^5 \frac{t_i}{1+t_i} P_i \cdot X_i \quad (36)$$

$$GEXP = \sum_{i=1}^5 P_i \cdot G_i + w_{ug} \cdot L_{ug} + w_s \cdot L_{sg} - (P_1 - e \cdot P_1^*) M_1 - (P_5 - e \cdot P_5^*) M_5 \quad (37)$$

$$RAT = -e \cdot P_5^* \cdot M_5 - e \cdot P_{0j}^* \cdot J_0 - e \cdot P_{04}^* \cdot II_4 + DEF + P_2 \cdot E_2 + P_4 \cdot E_4 + NFPA \quad (38)$$

$$M_1 = M_1^* + h_{01} \cdot (C_1^* - C_1) \quad (39)$$

$$II_i = II_i^* + h_{0i} \cdot \frac{(RAT - e \cdot P_{03}^* \cdot II_3^* - e \cdot P_{05}^* \cdot II_5^* - e \cdot P_1^* \cdot M_1)}{e \cdot P_{0i}^*} \quad (i=3,5) \quad (40)$$

$$CIMP_A = h_{0c} \cdot \frac{(RAT - e \cdot P_{03}^* \cdot II_3^* - e \cdot P_{05}^* \cdot II_5^* - e \cdot P_1^* \cdot M_1)}{e \cdot P_{0c}^*} \quad (41)$$

$$P_3 \cdot J_3 + P_5 \cdot J_5 + e \cdot P_{0j}^* \cdot J_0 + \sum_{i=1}^5 P_i \cdot DS_i = \quad (42)$$

$$s_a \cdot Y_a + s_u \cdot Y_u + s_s \cdot Y_s + s_z (1-t_z) Y_z + GREV - GEXP + DEF$$

Definition of variables

Endogenous variables

The model consists of 113 equations. Of these, 112 are independent since the investment-savings balance can be calculated from the rest of the equations. We therefore have the following 112 endogenous variables.

A_{ij}	intermediate deliveries, $I=1-5, j=3-5$
a_{0j}	intermediate imports-output coefficients sectors, $j=3-5$
a_{ij}	intermediate input-output coefficients sectors, $j=3-5, I=1-5$
B_i	variable costs per unit of output sectors, $I=2-4$
b_i	labour-output coefficients sectors, $I=3-5$
C_i	private consumption, $I=1-5$
$CIMP_D$	desired non-competitive consumer imports
$CIMP_A$	actual non-competitive consumer imports
D	consumer spending
DB	spending for floor consumption
DI_i	domestic intermediate goods aggregate sectors, $I=3-5$
E_4	exports sector 4
$GEXP$	government expenditure
$GREV$	government revenue
II_i	intermediate imports sectors, $I=3-5$
L_{ui}	unskilled workers sectors, $I=2-5$
L_{si}	skilled workers sectors, $I=2-5$
L_u	total unskilled workers
L_i	labour aggregates sectors, $I=2-5$
M_1	imports of agricultural goods
MC_i	marginal cost sectors, $I=3-5$
MC_{Ni}	marginal cost of intermediate goods aggregate sectors, $I=3-5$
MC_{VAi}	marginal cost of value added aggregate sectors, $I=3-5$
N_i	intermediate goods aggregate sectors, $I=3-5$
P_i	sectoral price levels, $I=1-5$
P_{Dfi}	price of domestic intermediate goods aggregate sectors, $I=3-5$
q_i	labour cost sectors, $I=2-5$
RAT	foreign exchange available for rationed goods
s_i	savings rates, $I=a,u,s,z$
T^{ND}	indirect taxes
w_s	wage rate skilled workers
X_i	sectoral output levels, $I=1-5$
Y_a	agricultural income
Y_s	wage income skilled workers
Y_u	wage income unskilled workers
Y_z	profit income

Parameters

a_{ij}	intermediate input-output coefficients sectors, $j=1-2, I=1-5$
b_2	labour-output coefficient sector 2
C_1^*	target on food consumption
f_{ij}	shares in domestic input aggregate sectors, $j=3-5, I=1-5$
h_{0i}	rationing parameters, $I=1,3,5,C$

II_i^*	minimum level of imported intermediates sectors, $I=3,5$
M_1^*	constant in agricultural imports function
m_c	propensity to consume non-competitive imports
m_i	marginal propensity to consume, $I=1-5$
n_i	intermediate goods-output ratio sectors, $I=3-5$
S	scaling parameter in savings function
s_1^*	constant in savings functions, $I=a,u,s,z$
t_i	indirect tax rates sectors, $I=1-5$
t_z	tax rate of profit income
α_i	distribution parameter of unskilled labour in CES aggregate sectors, $I=2-5$
β_i	distribution parameter of skilled labour in CES aggregate sectors, $I=2-5$
γ_i	savings response parameter, $I=a,u,s,z$
δ_i	elasticity of substitution in intermediate goods aggregate sectors, $I=3-5$
ϵ_{1i}	distribution parameter of intermediate imports in intermediate goods aggregate sectors, $I=3-5$
ϵ_{2i}	distribution parameter of domestic intermediates in intermediate goods aggregate sectors, $I=3-5$
η_i	elasticity of substitution in value added aggregate sectors, $I=3-5$
θ_i	floor consumption levels, $I=1-5$
κ_i	capital productivity sectors, $I=3-5$
μ_{1i}	distribution parameter of labour in value added aggregate sectors, $I=3-5$
μ_{2i}	distribution parameter of capital in value added aggregate sectors, $I=3-5$
σ_i	elasticity of substitution in labour aggregate sectors, $I=2-5$
τ_i	mark-up rates sectors, $I=2-5$

Exogenous variables

DS_i	changes in stocks, $I=1-5$
DEF	trade deficit
E_2	exports sector 2
e	exchange rate
G_i	government consumption, $I=1-5$
J_0	investment deliveries of imported goods
J_i	investment deliveries from sectors, $I=3,5$
K_i	capital in sectors, $I=3-5$
L_s	supply of skilled labour
L_{ug}, L_{sg}	government employment
M_5	competitive imports sector 5 goods
$NFPA$	net factor payments from abroad
P_i^*	foreign price of sectoral goods, $I=1,4,5$
P_{0C}^*	foreign price of non-competitive consumer imports
P_{0i}^*	foreign price of intermediate imports to sectors, $I=1,4,5$
P_{0j}^*	foreign price of investment goods
w_{ui}, w_{ug}	wage rates unskilled workers, $I=2-5$
XB_1	output level sector 1

Details about the calibration of the model are in Davies *et al* [199:4:193–198].

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