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**Country Development
Strategy Statement**

FY 1989

ZAMBIA



**Agency for International Development
Washington, D.C. 20523**

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ANNEX 1

**ZAMBIA
MACROECONOMIC BACKGROUND**

**by
Richard P. Harber, Jr.**

April, 1987

Lusaka, Zambia

ZAMBIA
MACROECONOMIC BACKGROUND

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ZAMBIA

MACROECONOMIC BACKGROUND

I. INTRODUCTION

Zambia's overall economic situation continues to be grim. The economy is suffering from the combined effects of a prolonged period of misaligned economic policies, a long-term decline in the price of copper (the predominant export commodity historically accounting for more than 90% of the country's merchandise export revenues), declining copper production and reserves, and an increasing external debt burden. The combined effects of these problems has been a long, steady decline in real per capita GDP (1980 prices) from \$653 in 1972 to \$346 in 1985. In kwacha terms real per capita GDP declined 38% from 1970 through 1986.

Although recognizing the problem earlier, the GRZ seriously began a process of economic reform and stabilization with the support of the IMF and the Western donor community only in 1982. Since that time, but especially over the period from October 1985 to December 1986, the GRZ has taken the significant step of announcing and at least partially implementing what can easily be called the most wide-ranging economic reform effort in Sub-Saharan Africa. If implemented, the GRZ reform program will lay the basis for the restructuring of Zambia's economy and the lessening of the country's dependence on the extractive sector, especially copper. Beginning in mid-December 1986, however, the GRZ has significantly slowed its pace of reform and has at least temporarily reversed several of its previous reform measures.

While implementation of a significant portion of the reform program has been started, the full and rapid implementation of the remainder of the program would not generate an instant recovery of Zambia's economy. The best that can be expected over the next two to five years is that the economy's rate of decline will be reduced and possibly stopped. Following this "bottoming out," the economy may then be expected to begin growing. The principal reason for this pessimistic view is Zambia's extreme financial imbalances, both domestic and external. Despite the pessimistic outlook for the economy over the next two to five years, the GRZ's reform program has already begun to result in improvements in selected economic areas.

II. MACROECONOMIC PERFORMANCE

A. Growth and Inflation

Zambia's overall GDP growth since 1984 has been sluggish, but positive in real terms. (Please see Table 1 at the end of this annex.) Over the two year period through 1986, total real GDP (1977 prices) has grown by a marginal 2.0% from K 2,011.7 million to an estimated K 2,069.0 million. Seventy-five percent of this growth, however, occurred from 1984 to 1985. Despite this positive real growth, per capita income has continued to decline by an additional 4% to 5%.

While aggregate GDP growth has been sluggish, the agricultural and manufacturing sectors have shown large growth rates over the 1984-86 period of 9% and 8%, respectively. Since these two sectors accounted for more than 38% of total GDP in 1986, this excellent performance can be viewed as encouraging. The one disturbing aspect in these two sectors is the relatively poor performance of the manufacturing sector in 1986 when it grew by only 0.5%.

The strong performance of the agricultural and manufacturing sectors was offset by dismal performance over the 1984-86 period in the three following sectors: mining (-14%); construction (-8.8%); and transportation, storage and communications (-8.2%).

Zambia's inflation rate (based on the implicit GDP deflator) averaged 8% from 1979 through 1982, and 18% for 1983 and 1984. In 1985 and 1986, prices increased dramatically at an annual rate of 34% and 54%, respectively. The principal reason for this dramatic increase in prices is the lack of restraint in GRZ fiscal and monetary policies. While the large devaluation of the kwacha caused increases in both the relative and absolute prices of imported goods, the underlying pressures of excess liquidity resulted in the validation of the overall increase in prices, i.e., allowed that adjustment in prices to result in economy-wide inflation. During 1986, however, the annualized monthly inflation rate using the Consumer Price Index indicated a slowing of the inflation rate. Lack of restraint and control over the growth of the money supply throughout the latter part of 1986 and low prospects for such restraint in 1987 mean that the likelihood of reduced inflation in 1987 and 1988 is low.

B. Balance of Payments

Zambia's current account and overall balances deteriorated significantly over the period 1983 through 1986. (Table 2) The current account deficit rose from SDR 208 million in 1983 to SDR 405 million in 1986, while the overall deficit increased from SDR 294 million to SDR 502 million over the same time period. The principal reasons behind this deterioration have been a 43% drop in export receipts, a 37% increase in interest obligations, and a 25% increase in debt amortization. Despite a projected improvement in exports for the period from 1987 through 1990, the increasing pressures of debt service are projected to maintain high current account and overall deficits of at least SDR 400 million and SDR 440-552 million, respectively, over the next four years.

Export revenues have consistently declined since 1983. From a peak of SDR 928 million in 1983, exports have fallen by almost 28% to a level of SDR 607 million in 1986. The reasons behind this massive decline are a 20% decline in copper prices and a 31% decline in copper production between 1983 and 1986. The bright spot on the export side is the performance of other, non-traditional export products. While showing only a 3.5% increase between 1983 and 1986, they increased almost 11% between 1985 and 1986. While each of the three components of exports (copper, cobalt, non-traditional/other) are projected to increase, the non-traditional exports are expected to be the driving force behind the growth with an annual growth rate of 20% projected by the GRZ. If attained this high rate of growth, which is critically dependent on a realistic exchange rate, will increase the share of non-traditional exports from 10% in 1985 to 27% in 1990.

Interest payments have increased almost 37% between 1983 and 1986, contributing to a deficit in the services account of SDR 385 million for 1986, SDR 341 million of which is interest payments.

The overall balance of payments deficits between 1983 and 1986 have been financed principally through debt rescheduling or the accumulation of arrears on Zambia's external debt. (Table 3) This is again expected to hold true for 1986, even though SDR 283 million of exceptional donor financing is estimated to have been provided. Despite the massive debt rescheduling in March, 1986, and the expected exceptional financing, the overall deficit for 1986 was not financed without the accumulation of new debt service arrears. Without further debt rescheduling the

accumulated financing gap for 1987 through 1990 is projected to reach SDR 2.7 billion.

Table 4 presents the data of Tables 2 and 3 in an altered format to highlight the major role that debt service plays in Zambia's balance of payments deficits. As can be clearly seen from this table, debt service is responsible for the deficits since the remaining components of the balance of payments show a consistent surplus.

Zambia's scheduled debt service to exports of goods and services ratio rose from 56% in 1983 to 110% in 1986. Rescheduling of current obligations in 1986 reduced this ratio to 64%; however, the planned reduction in debt arrears, including rescheduling, raises the service ratio back to 84%. Even after rescheduling, the 1986 service ratio is not sustainable.

Zambia's projected balance of payments position is unsustainable due largely to high debt service obligations. Given this situation, there are four possible courses of actions which can form the basis for dealing with the problem:

- 1) A contraction of imports below the levels projected;
- 2) An even more rapid growth of exports;
- 3) An increase of donor assistance and/or commercial borrowing averaging SDR 525 million in each of the four years over and above the roughly 4.3% growth in assistance already projected; and
- 4) The granting of even more complete and generous rescheduling.

While there is a chance that some combination of the above "solutions" may provide a way out of the balance of payments quagmire, the most likely result will be the renewed accumulation of debt arrears and the problems that are attendant with such an outcome.

C. Budget

The GRZ budget deficit fell from 13% of GDP in 1983 to 7.6% in 1984, then rose to 12.7% in 1985. The estimated deficit for 1986 is 29.8% of GDP, an increase of almost 135%. For 1987, however, the GRZ projects a decline in the deficit as a percentage of GDP to 12.2% (although this projection, as noted below, seems extremely optimistic). (Table 5)

Total expenditures increased by 109% between 1983 and 1985, with a further increase of 119% estimated in 1986. The principal reasons for these massive increases in expenditures are a 954% increase in interest obligations between 1983 and 1986, and exceptional expenditures due to the auction of over K1.3 billion in 1985 and 1986. Total expenditures are budgeted to increase an additional 10.3% in 1987.

The 1987 budget deficit is probably underestimated by at least K770 million or 35% of the announced deficit. The increased deficit is due to expected lower revenues, reduced counterpart grants, and higher expenditures than in the announced budget. The revenue shortfall of approximately K580 million arises due to the effects of a lower exchange rate on the mineral export tax and import duties. The K204 million reduction in donor counterpart grants is also due to the modified exchange rate regime.

The approximate K250 million increase in total expenditures over the announced budget arises from a K520 million higher estimate for maize and fertilizer subsidies, and a K330 million reduction in foreign interest payment commitments due to the modified exchange rate. The USAID estimate of K1.2 billion for subsidy payments should probably be considered a conservative estimate. Other independent estimates have placed the total subsidy bill as high as K1.5 billion.

In November 1986 during the IMF review of Zambia's stand-by agreement, concurrence was reached between the GRZ and the IMF staff concerning budgetary targets for 1987. (It should be noted that further GRZ/IMF discussions are on-going in April 1987 as this Annex is being prepared.) The key elements of the November 1986 agreement were:

- 1) Overall deficit (including grants, and on a commitments basis before debt relief) for 1987 should not exceed K1.3 billion, approximately 10% of GDP.
- 2) Total expenditures and net lending to decrease by 11%.
- 3) Introduction of a 15% levy on previously exempt imports.
- 4) Introduction of additional ad valorem excise taxes on petroleum products.

Based upon the announced budget and USAID's adjustments to the budget to reflect the changes in the exchange rate and more realistic subsidy estimates, it is

clear that the first two components of the November 1986 agreement with the IMF are not going to be met.

As noted above, the budgeted deficit amounts to K2.2 billion which exceeds the agreed IMF limits by 69%. Due to the use of an estimated 1987 GDP figure different from that used by the IMF the deficit as a percentage of GDP is only 12.2%. Using the revised estimate of GDP, the IMF deficit target of K1.3 billion would correspond to 7.2% of GDP. Given the necessary adjustments to the budget discussed above, the likely deficit of K3.0 billion to K3.3 billion exceeds the IMF target by 130% to 155%, while these figures represent 16% to 18% of GDP.

The budgeted level of expenditures of K7.0 billion represents a 10% increase, rather than an 11% decrease in expenditures over the 1986 levels. With the adjusted expenditure levels, the increase is at least 13%.

Implementation of the third and fourth measures agreed with the IMF in November 1986, however, was announced in the 1987 budget speech. In addition, the GZ announced other revenue measures not called for in the IMF agreement. It is not possible to provide an estimate of the revenue impact of these measures at this time; however, the bulk of the changes are directed towards equity improvements, but generally at a revenue cost. These additional revenue measures are:

- 1) Upward revision of tariff rates on competing imports;
- 2) Increase in import sales tax from 15% to 20%;
- 3) Doubling rebate (K25 to K50) per traveller on effects imported in personal baggage;
- 4) Broadening coverage of sales tax base on domestic goods and services, and raising turnover level from K20,000 to K50,000 before payment;
- 4) Reduction of excise duty and domestic sales tax rates (minimum 5% vs. minimum 15%) on goods produced using local technology;
- 5) Elimination of tax (15%) on interest income;
- 6) Increase of individual allowances (exemption) for income tax;
- 7) Easing taxation of terminal benefits; and
- 8) Mineral Export Tax rate reduced from 13% to 11%.

D. Money Supply

From 1980 through 1986 Zambia's broad money supply (M2, non-bank held currency, demand deposits, and time

deposits) grew at an average rate of 23% per annum, from K907.1 million at the end of 1980 to an estimated K3,600 million at the end of 1986. (Tables 8 and 9) This growth has not been evenly distributed over this period. From the end of 1980 through the second quarter of 1985, the average annual growth rate of M2 was just over 14%. From the end of the second quarter of 1985 through the end of 1986, the growth rate is estimated to have averaged just over 48% per annum.

The estimates for the central government budget deficit for 1987 do not present a favorable outlook for a reduction in the growth of the money supply. Based on the GRZ projected budget deficit of K2.2 billion, the deficit would be 61% of the estimated broad money supply at the end of 1986. Utilizing the USAID adjustments to the budget deficit, results in a deficit equal to 82% of the broad money supply. If the less conservative estimate of subsidy payments is used, the deficit would be approximately K3.4 billion or 91% of the broad money supply.

The need to finance the large 1987 budget deficit implies that a monetary growth of at least 50% can conservatively be expected in 1987. In conjunction with the continued monetary expansion in the latter part of 1986, continued high inflation rates (whether visible or suppressed through price controls and resulting shortages) can be expected in 1987 and into 1988.

E. Employment

Zambia's population has grown at an average annual rate of 3.2% between 1970 and 1986, while the labor force has grown at a rate of 3.3%. Over the same period, these growth rates have been increasing. For the period from 1980 through 1986, population and the labor force grew at an annual rate of 3.4%, while the current estimates show a population growth rate of at least 3.6%. These growth rates imply that the Zambian economy must expand available jobs at a rate of 3.6% per year just to keep up with the growth of the labor force.

In contrast to the major increase in the population and labor force, formal sector employment barely grew at an annual rate of 0.3% from 1970 through 1986. From 1980 through 1986, formal sector employment declined at an annual rate of 1.3%. The difference in the trends between formal sector employment and the labor force account for the fact that formal sector employment has declined from 27% of the labor force in 1970 to less than 17% in 1986. The relative

(and absolute since 1975) decline in formal sector employment since 1970 implies that informal sector employment and unemployment has risen dramatically at increasing annual rates, averaging 4.2% per annum for the 1970 through 1986 period. Unemployment and informal sector employment now accounts for almost 26% of the population.

F. External Debt

As noted above, debt service is a major contributor to both Zambia's balance of payments and fiscal deficits. Consistent data on the level and composition of Zambia's external debt are difficult to find. However, based upon available estimates from a variety of sources, Zambia's outstanding debt at the end of 1985 totalled approximately SDR 6.0 billion or US\$ 7.2 billion. Approximately 45.5% of this debt was owed to bilateral governments, 37.6% to multilateral organizations, 10.3% to private financial institutions, and 6.6% to suppliers.

Based upon an earlier analysis by USAID/Zambia (attached as Annex 4) it is clear that normal rescheduling rules under the Paris and London Clubs are not adequate. These rules will not provide Zambia the degree of debt relief necessary to reduce the debt burden to a sustainable level and provide an external and internal financial situation that will allow Zambia to significantly reverse the decline in per capita income.

III. STATUS OF THE ECONOMIC RESTRUCTURING PROCESS

A. Review of the Restructuring Program

1. GRZ Policy Commitments

In the face of continuing economic decline and rising domestic and regional political problems, the GRZ committed itself to adopt and implement a wide range of economic reforms which will set the stage for a restructuring of Zambia's economy if the reforms are fully and properly implemented. The GRZ structural adjustment effort is designed to ultimately reduce the economy's dependence on the extractive (mining) sector by providing the basis for economic growth in other economic sectors, especially agriculture. The full adjustment process in response to the reforms will take many years, but results are already being achieved and will continue to be achieved in the short-run as well.

The policy reform program that the GRZ has pursued seriously over approximately the past four years in support of the structural adjustment effort has been directed toward the following four goals:

- 1) External financial stabilization, i.e., correction of Zambia's continuing balance of payments problems through measures such as adopting a realistic exchange rate, the liberalization of external trade, and adjustments of its tariff structure;
- 2) Internal financial stabilization, i.e., reduction of domestic inflationary pressures and the distortions such pressures create through measures such as the control of fiscal deficits, limited monetary expansion, and economically realistic interest rates;
- 3) Market liberalization and the establishment of incentive pricing in all areas to provide the appropriate environment for economic growth and diversification; and
- 4) Gradually reducing the role of the extensive parastatal sector in the economy and improving the efficiency and productivity of the parastatal firms that remain.

The specific GRZ policy program announced to accomplish the four goals of its structural adjustment effort is composed of a mixture of macroeconomic and sectorial reforms. The macroeconomic stabilization measures

are designed to provide a general environment in which the sectorial policy measures can stimulate production. The reforms announced and partially implemented by December 1986 are presented below in groups corresponding to the four major goals of the GRZ's restructuring program. While many of these reforms serve multiple goals and effect many aspects of the economy, the following grouping is according to the principal purpose of each reform measure (see 86 Lusaka 05902 dated November 7, 1986 and the January 1987 Agricultural Policy Assessment Report for a more detailed discussion of the reforms).

1) External Financial Stabilization Measures:

- a) introduction of a foreign exchange auction system designed to provide a more efficient, market determined allocation of scarce foreign exchange resources and to achieve a more realistic exchange rate (also promotes efficiency and effects investment patterns in all sectors);
- b) liberalization of the foreign trade regime through easing the issuance of import and export licenses; and
- c) adjustment of tariff rates and plans for further review and overhaul of the tariff system in order to promote a more efficient allocation of resources.

2) Internal Financial Stabilization Measures:

- a) decontrol of interest rates;
- b) introduction of a treasury bill auction as a potential tool for the control of monetary growth; and
- c) agreement with the IMF to limit the government's budget deficit to 10% of GDP in 1987.

3) Market Liberalization Measures:

- a) continued efforts to liberalize the agricultural marketing system to allow a greater scope of operations for the private sector.
- b) increased agricultural producer floor prices to provide greater incentives to production of food and cash crops;

- c) all gazetted producer prices are to act as floor prices, so that market forces determine the actual prices paid to producers;
- d) elimination of subsidies on all maize products except roller meal; in addition, the subsidy on roller meal had been reduced (also has major impact on the goal of domestic financial stabilization);
- e) introduction of differential pricing for different types of fertilizer to reflect differing foreign exchange costs; and
- f) eventually eliminate fertilizer subsidies (also has major impact on the goal of domestic financial stabilization).

4) Parastatal Reforms:

- a) review and reduction of inefficient parastatal operations and improvement in the management and operating procedures of those remaining;
- b) parastatals are now required to operate on a profit-making basis and have been given the authority to adjust product prices; and
- c) rationalization of the mining sector through the closure of uneconomic facilities, revamping of employment and pay practices, and the development of production and investment plans.

All recent analyses of Zambia's economy have concluded that the economy must be restructured to reduce its dependence on the mining sector and provide the basis for future growth through the development of the non-mining sectors, especially agriculture. The policy reforms to which the GRZ has committed itself form the basis of this restructuring effort. While additional reforms in various sectors will eventually be required to complete the restructuring process of individual sectors, such reforms are of a much lower order of magnitude than the current reform measures. Before these additional reforms will be able to yield their maximum benefits, however, the current reform program must be fully implemented.

2. Status of Policy Implementation

While the content of the restructuring program announced by the GRZ has been a leading example for Sub-Saharan Africa, its implementation has not. The

problems of implementing a variety of individual reforms can be attributed to a number of factors; however, the major problem has been inadequate planning and coordination in the implementation process. As a result of these implementation problems, unexpected side effects have arisen during the implementation of some of the reforms (e.g., food riots due to the unavailability of roller meal when breakfast meal prices were decontrolled; or the build-up of auction arrears due to inappropriate attempts to control a market process). These negative side effects have provided those elements of the GRZ which are ideologically opposed to the reform process to seriously challenge the reform program and slow the momentum of the restructuring process.

As a consequence of the renewed challenge to the reform process and the (temporary) ascendancy of those opposed to the reform process, the implementation of a number of the major elements of the reform program has been (at least temporarily) reversed or slowed. At the same time, other elements of the reform program remain in place, and others have not been implemented in the detail throughout the economy which restructuring requires.

The restructuring goal of external stabilization was threatened when the foreign exchange auction was suspended at the end of January 1986. However, the re-introduction of a reasonable foreign exchange auction system in mid-March has placed this major element of the restructuring program back on track. The continuing steep devaluation of the kwacha, however, could result in the termination of the auction, probably on a permanent basis. The implementation of the tariff reforms has been slower than anticipated due to the process of balancing the interests of the various sectors in the reform and lack of GRZ attention to this reform.

The restructuring goal most seriously damaged by the recent changes has been that of domestic financial stabilization. Interest rates are once again controlled (reversing their earlier decontrol), and are set at only half the real economic rate. Efforts to control the budget deficit remain stagnant, principally due to the continued high subsidy payments resulting from the reversal of the decision to decontrol breakfast meal prices. Adjustments in bank deposit reserve requirements represent positive steps to restrain the growth of the money supply, but their effectiveness is likely to be limited while the projected budget deficit represents at least 70% of the money supply.

Market liberalization measures remain in place. However, prospects for major progress in reducing maize meal subsidies in the next eighteen to twenty-four months are slight. The prospects for reducing fertilizer subsidies are slightly more promising since the subsidy on fertilizer sold to commercial farmers is tentatively scheduled to be totally eliminated for the 1987/88 crop season. Nevertheless, such reductions could be problematical given the linkages in the GRZ's cost of production approach to maize pricing and the psychological problem of breaking the historical relationship of roughly equal prices for a 50 kg bag of fertilizer and a 90 kg bag of maize.

Elements of the parastatal reform efforts, e.g., privatization of inefficient organizations, have not been implemented as quickly or as broadly as originally anticipated. Nevertheless, parastatals increased autonomy over operations and the requirement that they operate on a profit-making basis have been implemented and are helping to improve the efficiency of parastatal operations. This factor is very important to Zambia's "mixed economy."

Given the current economic, social and political environment, major new policy pronouncements are not to be expected and are not greatly needed. Instead the GRZ and donors should concentrate on the maintenance and implementation of reform measures that have already been announced. A major effort will be required on all parts to achieve this goal. While major new policies are unlikely, there appears to be an opening for extending some reforms. One such area is the development of mechanisms to minimize the adverse effects in agricultural marketing for products where, despite the absence of price controls, the conditions or a fully competitive situation do not exist. As explained in Annex 2, many commodity markets can be characterized as either monopsonies (e.g., wheat) or oligopsonies (e.g., oil extraction). In these markets where either due to inadequate numbers of buyers, inadequate processing capacity, dominance of one or two major buyers, or combinations of these factors, there is a need for the development of "pricing agreements" to guarantee fair and economically rational prices for producers through the use of procedures such as export/import parity pricing.

Discussions on this idea as it relates to maize have been a major element of the ZATPID I Project and of the ZAMCAM Program. Based on discussions, it seems that there is a strong possibility that these ideas can be successfully applied to other crops. While such reforms lack the broad impact of the macroeconomic reform program, as well as the

urgency of the maize and fertilizer pricing/subsidy questions, they may be more politically feasible and are necessary steps in the restructuring process and are required for the continued growth and diversification of Zambia's agricultural sector.

While many of the GRZ reforms have been implemented to different degrees, the lack of expected movement and problems which have arisen are largely due to an inadequate GRZ capacity and attention to the implementation of the reforms. Thus, USAID/Zambia will be placing a much greater emphasis on assisting the GRZ in the reform implementation process over the FY 1987 - FY 1989 period. This focus is designed to promote progress of the GRZ's restructuring program, slow the rate of decline of the economy, and help prevent the types of policy changes which have recently occurred.

B. Review of Recent Policy Changes

Beginning in mid-December 1986 and continuing through early March 1987, the GRZ has significantly slowed and reversed its progress with respect to certain aspects of its policy reform and economic restructuring program. As the situation now stands, parts of the GRZ domestic stabilization program have been reversed or suspended. The basic elements of the agricultural liberalization program which had previously been implemented, however, remain in place, as do those elements of the parastatal reforms that have been implemented.

The major changes in the reform program have been:

- 1) The reversal of the decision to and implementation of the decontrol of breakfast meal prices;
- 2) The nationalization of 13 private maize mills increasing parastatal control from approximately 60%-65% of total milling capacity to approximately 85%-90% of total milling capacity;
- 3) On January 28, 1987 President Kaunda announced that the auction would no longer be used for setting the exchange rate, but would be maintained as an allocation device. Auctions from January 31 through March 21 were suspended pending the development of new auction guidelines and their review by the IMF and World Bank. On March 17 new guidelines for a revised foreign exchange regime and auction were announced by the Bank of Zambia and became immediately effective

with the first auction under the new rules on March 28, 1987. There is now a two-tier exchange rate system with an official rate pegged to a basket of currencies of Zambia's principal trading partners and a Dutch auction system with a floor for bids of the official rate, but with no upper limit on auction bids. Agricultural and small scale industrial enterprises must compete for foreign exchange, but if successful pay only the marginal or strike rate.

- 4) On February 4, 1987 the Bank of Zambia announced that BOZ interest rates were being reduced from 30% to 20% with immediate effect. Further, "Lending rates by commercial banks must not exceed five points above the new Bank rate, which means a reduction in commercial bank's lending and overdraft rate from an average maximum of about 35% to 25%." At the same time, the BOZ Governor announced that the Treasury Bill rate was reduced from 28% to 18%. These changes imply a) interest rates are now more negative in real terms than before; b) the decontrol of interest rates has been revoked; and c) the Treasury Bill auction has been damaged if not suspended.
- 5) GRZ efforts to find ways to control its budget deficit were unsuccessful through March 1987 when the joint IMF/IBRD team departed Lusaka. GRZ/IMF discussions on this topic continued during April 1987. If these efforts continue to be unsuccessful, GRZ efforts to limit the growth of the money supply are likely to have limited success.

While the recent changes discussed above are few compared to the total restructuring program, they represent potentially serious problems for elements of the restructuring program. The first two changes both occurred as reactions to the December 1986 food riots. Discussions with various elements of the GRZ indicate that little progress in reducing maize subsidies can be expected in the next eighteen to twenty-four months because of the high political sensitivities which remain. However, it seems likely that the GRZ will continue their attempt to devise a workable mechanism for the payment of the maize subsidy directly to millers rather than to the National Agricultural Marketing Board (NAMBOARD) and the Provincial Cooperative Unions (PCUs). In addition, the GRZ has accepted the principle of using border pricing to set the maize floor price, and allowing market forces to provide actual producer prices which vary by region and season. These two changes

would be major steps in promoting the continued liberalization of the maize marketing system. The major drawbacks that would remain with this approach would be the continued distortion of consumption patterns and the budgetary drain associated with the maize subsidy.

The temporary suspension of the foreign exchange auction system and its subsequent modification has maintained the basic principles of the original auction. Thus, aside from the psychological insecurity it reinforced, and the short-term impact of foreign exchange shortages within the productive sector and some loss of confidence resulting from the two month suspension, the effects of this change on the restructuring program will be minimal. The principal problem remaining for the modified auction is the generation and provision of sufficient foreign exchange to maintain a politically acceptable auction-determined exchange rate.

The last two of the above five changes (i.e., the re-introduction of controlled interest rates, and the lack of budgetary deficit control) pose the greatest problems for the restructuring effort since they undermine the efforts to stabilize domestic financial accounts. The Ministry of Finance (MOF), however, recognizes the problems posed by the large budget deficit and is attempting to find politically acceptable ways to deal with this problem. There are of course counter influences to keep public expenditures higher than Zambia can afford. At this time, there are no indications that the renewed interest rate controls will be lifted.

While the policy changes have been few, they are significant. If the changes stay or are expanded, the reform program is in serious trouble. If the changes are reversed (as the auction was) or modified, there is hope for partial, slower reforms.

Given Zambia's desperate economic situation as described above and the expectation that the GRZ's progress in implementing its reform program will not be a smooth, continuous process, it is vitally important that the Mission's program strategy have the flexibility to be able to:

- 1) respond to the expected irregularity of the GRZ's implementation of its reform program;
- 2) provide the critically needed financial and technical resources to support the GRZ's efforts when positive actions are undertaken;

- 3) continue the policy analysis training and institution building of the ZATPID and HIRD Projects especially if the reform process is proceeding at a slower pace; and
- 4) examine alternative uses of program assistance to help reduce the burden of Zambia's external debt on the economy.

TABLE 1: Real GDP, Growth and Inflation, 1984-1986

| SECTOR | Million Kwacha, 1977 Prices | | | Real Growth Rates | | Inflation Rates | |
|--|-----------------------------|--------|--------|-------------------|-------|-----------------|--------|
| | 1984 | 1985 | 1986 | 1985 | 1986 | 1985 | 1986 |
| Agriculture, Forestry, & Fishing | 332.2 | 343.8 | 363.8 | 3.4% | 5.7% | 22.0% | 28.9% |
| Mining & Quarrying | 200.0 | 185.4 | 173.9 | -7.6% | -6.4% | 56.8% | 106.1% |
| Manufacturing | 389.3 | 419.5 | 421.2 | 7.5% | .4% | 39.1% | 40.8% |
| Electricity, Gas & Water | 70.9 | 72.7 | 74.1 | 2.5% | 1.9% | -.5% | -.2% |
| Construction | 88.6 | 77.1 | 81.1 | -13.9% | 5.1% | 31.6% | 45.8% |
| Wholesale & Retail Trade | 169.9 | 174.7 | 169.0 | 2.8% | -3.3% | 35.4% | 35.2% |
| Hotels, Bars & Restaurants | 49.0 | 51.3 | 49.2 | 4.6% | -4.2% | 31.7% | 34.0% |
| Transport, Storage & Communications | 116.2 | 108.7 | 107.1 | -6.7% | -1.5% | 49.5% | 45.4% |
| Financial Institutions & Insurance | 62.5 | 60.6 | 60.2 | -3.1% | -.7% | 31.1% | 55.6% |
| Real Estate & Business Services | 179.5 | 179.0 | 182.9 | -.3% | 2.2% | 28.1% | 30.7% |
| Community Social & Personal Services | 354.9 | 365.6 | 361.5 | 3.0% | -1.1% | 17.7% | 21.5% |
| Import Duties | 18.0 | 19.9 | 22.0 | 10.0% | 10.0% | 76.7% | 103.5% |
| Sub-Total | 2031.0 | 2058.3 | 2066.0 | 1.3% | .4% | 37.4% | 55.0% |
| Less: Imported Banking Service Charges | 17.5 | 16.9 | 16.8 | -3.5% | -.6% | 29.3% | 55.4% |
| Gross Domestic Product | 2011.7 | 2041.4 | 2052.2 | 1.5% | .5% | 34.3% | 53.5% |

SOURCE: GRZ, NCDP, Economic Review 1986 and Annual Plan 1987. January, 1987.

TABLE 2: Zambia Balance of Payments, 1983-1990
(In Millions of SDRs)

| Item | 1983 Actual | 1984 Actual | 1985 Prelim. | 1986 Est. | 1987 | 1988 | 1989 | 1990 |
|---|-----------------------|----------------|-----------------|--------------|-------|-------|-------|--------|
| | -----Projections----- | | | | | | | |
| Trade Balance | 143 | 155 | 61 | -50 | -59 | -62 | -54 | -39 |
| Exports, fob | 928 | 861 | 802 | 607 | 632 | 658 | 696 | 742 |
| Copper | 808 | 705 | 636 | 484 | 505 | 502 | 500 | 498 |
| Cobalt | 35 | 77 | 87 | 35 | 32 | 37 | 42 | 44 |
| Other | 85 | 79 | 79 | 88 | 95 | 119 | 154 | 200 |
| Imports, cif | 785 | 706 | 741 | 657 | 691 | 720 | 750 | 781 |
| Project Related and Commodity Aid | 265 | 226 | 261 | 255 | 266 | 278 | 291 | 303 |
| Petroleum | 171 | 138 | 140 | 72 | 80 | 83 | 87 | 90 |
| Other | 349 | 342 | 340 | 330 | 345 | 359 | 372 | 388 |
| Net Services | -334 | -384 | -401 | -385 | -379 | -399 | -405 | -396 |
| Interest Payments | 236 | 270 | 306 | 341 | 339 | 368 | 386 | 390 |
| Other (net) | -98 | -114 | -95 | -44 | -40 | -31 | -19 | -6 |
| Receipts | 102 | 85 | 95 | 100 | 110 | 121 | 133 | 146 |
| Payments | 200 | 199 | 190 | 144 | 150 | 152 | 152 | 152 |
| Unrequited Transfers | -17 | 2 | 21 | 30 | 32 | 33 | 35 | 36 |
| Private | -51 | -50 | -50 | -45 | -47 | -50 | -52 | -55 |
| Official | 34 | 52 | 71 | 75 | 79 | 83 | 87 | 91 |
| Current Account | -208 | -227 | -319 | -405 | -406 | -428 | -424 | -399 |
| Non-monetary Capital | -86 | -217 | -180 | -97 | -146 | -85 | -59 | -40 |
| Public Sector (net) | 66 | -137 | -175 | -140 | -142 | -113 | -87 | -68 |
| Mining Company (net) | -62 | 15 | 65 | 40 | 40 | 40 | 40 | 40 |
| Other 1/ | -90 | -95 | -70 | 3 | -44 | -12 | -12 | -12 |
| Overall Balance | -294 | -444 | -499 | -502 | -552 | -513 | -483 | -439 |
| Memorandum Items: | | | | | | | | |
| Copper Exports: | | | | | | | | |
| Volume ('000 MT) | 570 | 541 | 475 | 465 | 500 | 500 | 500 | 500 |
| Price (SDR/MT) | 1,418 | 1,303 | 1,339 | 1,041 | 1,010 | 1,004 | 1,000 | 996 |
| Cobalt Exports: | | | | | | | | |
| Volume (MT) | 3,229 | 3,872 | 3,800 | 3,000 | 3,600 | 4,000 | 4,400 | 4,400 |
| Price (SDR/MT) | 10,839 | 19,886 | 22,895 | 11,667 | 8,889 | 9,250 | 9,545 | 10,000 |
| Non-Monetary Capital(net) | 4 | -122 | -110 | -100 | -102 | -73 | -46 | -28 |
| Disbursements | 231 | 174 | 230 | 190 | 198 | 206 | 214 | 222 |
| Amortization | 227 | 296 | 340 | 290 | 300 | 279 | 260 | 250 |
| Current Account Balance as a Percentage of GDP | -6.7% | -8.5% | -14.0% | -35.8% | -- | -- | -- | -- |

1/ Includes Errors and Omissions, SDR allocation, and gold revaluation.

SOURCE: Bank of Zambia.

TABLE 3: Zambia Balance of Payments Financing, 1983-1990
(In Millions of SDRs)

| Item | 1983 Actual | 1984 Actual | 1985 Prelim. | 1986 Est. | 1987 | 1988 | 1989 | 1990 |
|--|----------------|----------------|-----------------|--------------|-----------------------|-------|-------|-------|
| | | | | | -----Projections----- | | | |
| Financing Required | 294 | 444 | 499 | 502 | 552 | 513 | 483 | 439 |
| Financing Available | 294 | 444 | 483 | 154 | -246 | -220 | -186 | -74 |
| IMF (net) | 60 | 74 | -95 | 10 | -145 | -153 | -97 | -39 |
| Purchases | 174 | 148 | 0 | 158 | 36 | 0 | 0 | 0 |
| CFF | -- | -- | -- | 69 | -- | -- | -- | -- |
| Stand-by | -- | -- | -- | 35 | -- | -- | -- | -- |
| Possible SAF | -- | -- | -- | 54 | 36 | -- | -- | -- |
| Repurchases | 114 | 74 | 95 | 148 | 181 | 153 | 97 | 39 |
| Other Foreign Assets (net) (increase = -) | -11 | 15 | 0 | -40 | -20 | -10 | -10 | -10 |
| Central Bank | -- | -- | -- | -20 | -20 | -10 | -10 | -10 |
| Commercial Banks | -- | -- | -- | -20 | -- | -- | -- | -- |
| Debt Rescheduling | 293 | 470 | 0 | 897 | 0 | 0 | 0 | 0 |
| Scheduled Obligations | 96 | 244 | -- | 327 | -- | -- | -- | -- |
| Arrears | 197 | 226 | -- | 570 | -- | -- | -- | -- |
| Change in Arrears | -48 | -115 | 578 | -713 | -81 | -57 | -79 | -25 |
| Incurrence/cash reduction (-) | 149 | 111 | 578 | -143 | -81 | -25 | -79 | -25 |
| Commercial Payments | -50 | 25 | 14 | 18 | -46 | -25 | -79 | -25 |
| Rescheduled Debt | 38 | 25 | 205 | -6 | -- | -- | -- | -- |
| Other External Debt <u>1/</u> | 161 | 61 | 359 | -155 | -35 | -- | -- | -- |
| Rescheduled Arrears | 197 | 226 | -- | 570 | -- | -- | -- | -- |
| Financing Gap | 0 | 0 | 16 | 348 | 798 | 733 | 669 | 513 |
| Exceptional Donor Assistance: In place | 0 | -- | 16 | 165 | 66 | -- | -- | -- |
| Expected <u>2/</u> | | | | 118 | | | | |
| Residual Gap | 0 | 0 | 0 | 65 | 732 | 733 | 669 | 513 |
| <u>Cumulative Gap</u> | 0 | 0 | 0 | 65 | 797 | 1,530 | 2,199 | 2,712 |

1/ Other External Debt Arrears in 1987 includes payment to Standard Chartered Bank of SDR 15 million and the oil facility of SDR 20 million.

2/ For 1986, additional financing is expected as follows: IMF, SDR 35 million; World Bank, SDR 53 million; and Commercial Bank Borrowing, SDR 30 million.

SOURCE: Bank of Zambia.

TABLE 4: Zambia Balance of Payments, 1983-1990
(In Millions of SDRs)

| Item | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
|---------------------------|--------|--------|--------------------------------------|-------|-----------------------|--------|--------|--------|
| | Actual | Actual | Prelim. | Est. | -----Projections----- | | | |
| Sources of FX | 1,469 | 1,320 | 1,214 | 1,413 | 1,121 | 1,068 | 1,130 | 1,201 |
| Exports | 928 | 861 | 802 | 607 | 632 | 658 | 696 | 742 |
| Service Receipts | 102 | 85 | 95 | 100 | 110 | 121 | 133 | 146 |
| Official Transfers | 34 | 52 | 71 | 75 | 79 | 83 | 87 | 91 |
| Loan Disbursements | 231 | 174 | 230 | 190 | 198 | 206 | 214 | 222 |
| IMF Purchases | 174 | 148 | 0 | 158 | 36 | 0 | 0 | 0 |
| Exceptional Donor Ass. | 0 | 0 | 16 | 283 | 66 | 0 | 0 | 0 |
| Uses of FX, Excluding | | | | | | | | |
| Debt Service: | 1,137 | 1,035 | 1,051 | 883 | 952 | 944 | 977 | 1,010 |
| Imports | 785 | 706 | 741 | 657 | 691 | 720 | 750 | 781 |
| Non-Interest Service | | | | | | | | |
| Payments | 200 | 199 | 190 | 144 | 150 | 152 | 152 | 152 |
| Private Transfers | 51 | 50 | 50 | 45 | 47 | 50 | 52 | 55 |
| Non-Amortization | | | | | | | | |
| Components of | | | | | | | | |
| Non-Monetary Capital | 90 | 95 | 70 | -3 | 44 | 12 | 13 | 12 |
| Accumulation of | | | | | | | | |
| Foreign Assets | 11 | -15 | 0 | 40 | 20 | 10 | 10 | 10 |
| Balance Excluding Debt | | | | | | | | |
| Service | 332 | 285 | 163 | 412 | 169 | 124 | 153 | 191 |
| Scheduled Debt Service | 577 | 640 | 741 | 779 | 820 | 800 | 743 | 679 |
| Interest | 236 | 270 | 306 | 341 | 339 | 368 | 386 | 390 |
| Amortization | 227 | 296 | 340 | 290 | 300 | 279 | 260 | 250 |
| IMF Repurchases | 114 | 74 | 95 | 148 | 181 | 153 | 97 | 39 |
| Balance Including Debt | | | | | | | | |
| Service | -245 | -355 | -578 | -367 | -651 | -676 | -590 | -488 |
| Debt Rescheduling | 293 | 470 | 0 | 897 | 0 | 0 | 0 | 0 |
| Change in Arrears | -48 | -115 | 578 | -713 | -81 | -57 | -79 | -25 |
| Expost Balance | 0 | 0 | 0 | -65 | -732 | -733 | -669 | -513 |
| Cumulative Expost Balance | 0 | 0 | 0 | -65 | -797 | -1,530 | -2,199 | -2,712 |
| Debt Service Ratios: | | | (% of Exports of Goods and Services) | | | | | |
| Scheduled | 56.0 | 67.7 | 82.6 | 110.2 | 110.5 | 102.7 | 89.6 | 76.5 |
| After Relief(Scheduled) | 46.7 | 41.9 | 82.6 | 63.9 | 110.5 | 102.7 | 89.6 | 76.5 |
| After Relief & Arrears | 32.2 | 30.1 | 18.2 | 84.2 | 121.4 | 110.0 | 99.2 | 79.3 |

SOURCE: Bank of Zambia.

TABLE 5: Zambia Central Government Budget, 1985-1987
(Kwacha Millions, Current Prices)

| Item | 1985 Actual | 1986 Target | 1986* Actual | 1987 Budget | USAID 1987+ Budget |
|-----------------------------|----------------|----------------|-----------------|----------------|--------------------------|
| Revenue & Grants | 1,691.8 | 3,591.0 | 3,349.3 | 4,801.4 | 4,223.3 |
| Total Tax Revenue | 1,384.9 | 3,001.0 | 2,569.8 | 3,727.1 | 3,353.1 |
| Mineral Export Tax | 192.2 | 750.0 | 600.0 | 900.0 | 675.0 |
| Import Taxes | 295.3 | 1072.0 | 764.2 | 596.0 | 447.0 |
| Domestic Excise Taxes | 489.0 | 559.0 | 560.6 | 1,505.9 | 1,505.9 |
| Income Taxes | 408.4 | 620.0 | 645.0 | 725.2 | 725.2 |
| Non-Tax Revenue | 151.4 | 80.0 | 269.5 | 257.9 | 257.9 |
| Grants | 155.5 | 510.0 | 510.0 | 816.4 | 612.3 |
| Total Expenditure | 2,897.0 | 5,710.0 | 6,340.7 | 6,993.2 | 7,186.2 |
| Current Expenditure | 2,231.6 | 3,978.0 | 4,464.1 | 5,624.7 | 5,817.7 |
| Personal Emoluments | 542.1 | 634.0 | 636.3 | 824.1 | 824.1 |
| Recurrent Dept. Charges | 310.3 | 605.0 | 550.7 | 725.2 | 725.2 |
| Subsidies | 209.7 | 332.0 | 485.0 | 676.8 | 1,200.0 |
| Constitutional & Statutory | 991.3 | 2,154.0 | 2,384.1 | 3,041.8 | 2,711.6 |
| Interest | 789.0 | 1,879.0 | 2,045.1 | 2,411.8 | 2,081.6 |
| Foreign | 452.0 | 1,307.0 | 1,587.4 | 1,816.0 | 1,485.8 |
| Domestic | 337.0 | 572.0 | 457.7 | 595.8 | 595.8 |
| Other | 202.3 | 275.0 | 339.0 | 630.0 | 630.0 |
| Transfers & Pensions | 178.2 | 253.0 | 408.0 | 356.8 | 356.8 |
| Zambia Airways | -- | 15.0 | 102.0 | -- | -- |
| Other | -- | 238.0 | 306.0 | -- | -- |
| Capital Expenditure | 308.9 | 678.0 | 422.0 | 1,208.5 | 1,208.5 |
| Net Lending | 147.4 | 184.0 | 302.0 | 160.0 | 160.0 |
| Exceptional Expenditure | 209.1 | 870.0 | 1,152.6 | 0.0 | 0.0 |
| Deficit (Commitment Basis): | | | | | |
| Excluding Grants | 1,360.7 | 2,629.0 | 3,501.4 | 3,008.2 | 3,575.2 |
| Including Grants | 1,205.2 | 2,119.0 | 2,991.4 | 2,191.8 | 2,962.9 |
| Deficit (Cash Basis): | | | | | |
| Excluding Grants | 893.7 | 2,884.0 | 3,607.7 | -- | -- |
| Including Grants | 738.2 | 2,374.0 | 3,097.7 | -- | -- |

* 1986 Actual figures based on November, 1986 estimates.

+ Adjustments based on revised exchange rate assumptions and more realistic estimate of subsidy payments.

SOURCE: GRZ, NCDP, Economic Review 1986 and Annual Plan 1987. January, 1987.

TABLE 6: Zambia Central Government Budget, 1985-1987
Key Ratios
(Kwacha Millions, Current Prices)

| Item | 1985 Actual | 1986 Target | 1986* Actual | 1987 Budget | USAID 1987+ Budget |
|------------------------------------|----------------|----------------|-----------------|----------------|--------------------------|
| Deficit (Commitment Basis): | | | | | |
| Excluding Grants | 1,360.7 | 2,629.0 | 3,501.4 | 3,008.2 | 3,575.2 |
| Including Grants | 1,205.2 | 2,119.0 | 2,991.4 | 2,191.8 | 2,962.9 |
| Deficit (Cash Basis): | | | | | |
| Excluding Grants | 893.7 | 2,884.0 | 3,607.7 | -- | -- |
| Including Grants | 738.2 | 2,374.0 | 3,097.7 | -- | -- |
| GDP | 7,049 | 12,098 | 12,098 | 18,038 | 18,038 |
| Deficit as Percent of GDP: | | | | | |
| Commitment Basis: | | | | | |
| Excluding Grants | 19.3% | 21.7% | 28.9% | 16.7% | 19.8% |
| Including Grants | 17.1% | 17.5% | 24.7% | 12.2% | 16.4% |
| Cash Basis: | | | | | |
| Excluding Grants | 12.7% | 23.8% | 29.8% | -- | -- |
| Including Grants | 10.5% | 19.6% | 25.6% | -- | -- |
| Items as Percent of GDP: | | | | | |
| Tax Revenues | 19.6% | 24.8% | 21.2% | 20.7% | 18.6% |
| Non-Tax Revenues | 2.1% | .7% | 2.2% | 1.4% | 1.4% |
| Grants | 2.2% | 4.2% | 4.2% | 4.5% | 3.4% |
| Current Expenditures | | | | | |
| Subsidies | 3.0% | 2.7% | 4.0% | 3.8% | 6.7% |
| Interest | 11.2% | 15.5% | 16.9% | 13.4% | 11.5% |
| Capital Expenditures | 4.4% | 5.6% | 3.5% | 6.7% | 6.7% |
| Net Lending | 2.1% | 1.5% | 2.5% | 0.9% | 0.9% |
| Exceptional Expenditures | 3.0% | 7.2% | 9.5% | 0.0% | 0.0% |

* 1986 Actual figures based on November, 1986 estimates.

+ Adjustments based on revised exchange rate assumptions and more realistic estimate of subsidy payments.

SOURCE: GRZ, NCDP, Economic Review 1986 and Annual Plan 1987. January, 1987.

TABLE 7: Zambia Central Government Budget, 1985-1987
(Kwacha Millions, 1986 Prices)

| Item | 1985 | 1986 | 1986* | 1987 | USAID |
|-----------------------------|---------|---------|---------|---------|-----------------|
| | Actual | Target | Actual | Budget | 1987+ Budget |
| Revenue & Grants | 2,888.5 | 3,591.0 | 3,349.3 | 3,200.9 | 2,815.5 |
| Total Tax Revenue | 2,364.5 | 3,001.0 | 2,569.8 | 2,484.7 | 2,235.4 |
| Mineral Export Tax | 328.2 | 750.0 | 600.0 | 600.0 | 450.0 |
| Import Taxes | 504.2 | 1072.0 | 764.2 | 397.3 | 298.0 |
| Domestic Excise Taxes | 834.9 | 559.0 | 560.6 | 1,003.9 | 1,003.9 |
| Income Taxes | 697.3 | 620.0 | 645.0 | 483.5 | 483.5 |
| Non-Tax Revenue | 258.5 | 80.0 | 269.5 | 171.9 | 171.9 |
| Grants | 265.5 | 510.0 | 510.0 | 544.3 | 408.2 |
| Total Expenditure | 4,946.2 | 5,710.0 | 6,340.7 | 4,662.1 | 4,790.8 |
| Current Expenditure | 3,810.1 | 3,978.0 | 4,662.1 | 3,749.8 | 3,878.5 |
| Personal Emoluments | 925.6 | 634.0 | 636.3 | 549.4 | 549.4 |
| Recurrent Dept. Charges | 529.8 | 605.0 | 550.7 | 483.5 | 483.5 |
| Subsidies | 358.0 | 332.0 | 485.0 | 451.2 | 800.0 |
| Constitutional & Statutory | 1,692.5 | 2,154.0 | 2,384.1 | 2,027.9 | 1,807.7 |
| Interest | 1,347.1 | 1,879.0 | 2,045.1 | 1,607.9 | 1,387.7 |
| Foreign | 771.7 | 1,307.0 | 1,587.4 | -- | -- |
| Domestic | 575.4 | 572.0 | 457.7 | -- | -- |
| Other | 345.4 | 275.0 | 339.0 | 420.0 | 420.0 |
| Transfers & Pensions | 304.3 | 253.0 | 408.0 | 237.9 | 237.9 |
| Zambia Airways | -- | 15.0 | 102.0 | -- | -- |
| Other | -- | 238.0 | 306.0 | -- | -- |
| Capital Expenditure | 527.4 | 678.0 | 422.0 | 805.7 | 805.7 |
| Net Lending | 251.7 | 184.0 | 302.0 | 106.7 | 106.7 |
| Exceptional Expenditure | 357.0 | 870.0 | 1,152.6 | 0.0 | 0.0 |
| Deficit (Commitment Basis): | | | | | |
| Excluding Grants | 2,323.2 | 2,629.0 | 3,501.4 | 2,005.5 | 2,383.5 |
| Including Grants | 2,057.7 | 2,119.0 | 2,991.4 | 1,461.2 | 1,975.3 |
| Deficit (Cash Basis): | | | | | |
| Excluding Grants | 1,525.9 | 2,884.0 | 3,607.7 | 3,642.0 | 3,505.9 |
| Including Grants | 1,260.4 | 2,374.0 | 3,097.7 | 3,097.7 | 3,097.7 |

* 1986 Actual figures based on November, 1986 estimates.

1987 Budget figures estimated using a 50% inflation rate.

SOURCE: GRZ, NCDP, Economic Review 1986 and Annual Plan 1987. January, 1987.

TABLE 8: Zambia's Money Supply, 1980-1986
(Kwacha Millions, Current Prices)

| Period | Non-Bank | Demand | Time | | | Non-Bank | Demand | Time | | |
|----------------|----------|-----------------|----------|---------|----------|----------|--------------------|----------|-------|----------|
| Year | Qtr | Currency | Deposits | M1 | Deposits | M2 | Currency | Deposits | M1 | Deposits |
| Kwacha Million | | | | | | | As a Percent of M2 | | | |
| 1980 | 4 | -- | -- | 519.0 | 388.1 | 907.1 | -- | -- | 57.2% | 42.8% |
| 1981 | 4 | -- | -- | 563.7 | 415.1 | 978.8 | -- | -- | 57.6% | 42.4% |
| 1982 | 4 | -- | -- | 689.5 | 619.8 | 1,309.3 | -- | -- | 52.7% | 47.3% |
| 1983 | 4 | -- | -- | 795.3 | 658.9 | 1,454.2 | -- | -- | 54.7% | 45.3% |
| 1984 | 1 | 228.4 | 457.7 | 686.1 | 697.6 | 1,383.7 | 16.5% | 33.1% | 49.6% | 50.4% |
| | 2 | 242.9 | 489.9 | 732.8 | 750.7 | 1,483.5 | 16.4% | 33.0% | 49.4% | 50.6% |
| | 3 | 263.5 | 626.8 | 890.3 | 747.2 | 1,637.5 | 16.1% | 38.3% | 54.4% | 45.6% |
| | 4 | 285.6 | 581.2 | 866.8 | 836.6 | 1,703.4 | 16.8% | 34.1% | 50.9% | 49.1% |
| 1985 | 1 | 259.3 | 598.5 | 857.8 | 823.0 | 1,680.8 | 15.4% | 35.6% | 51.0% | 49.0% |
| | 2 | 284.0 | 657.6 | 941.6 | 789.0 | 1,730.6 | 16.4% | 38.0% | 54.4% | 45.6% |
| | 3 | 307.6 | 727.1 | 1,034.7 | 835.9 | 1,870.6 | 16.4% | 38.9% | 55.3% | 44.7% |
| | 4 | 343.5 | 886.2 | 1,229.7 | 875.1 | 2,104.8 | 16.3% | 42.1% | 58.4% | 41.6% |
| 1986 | 1 | 337.3 | 1,117.4 | 1,454.7 | 1,049.7 | 2,504.4 | 13.5% | 44.6% | 58.1% | 41.9% |
| | 2 | 348.8 | 1,192.4 | 1,541.2 | 1,171.3 | 2,712.5 | 12.9% | 44.0% | 56.8% | 43.2% |
| | 3 | 495.4 | 1,389.8 | 1,885.2 | 1,299.3 | 3,184.5 | 15.6% | 43.6% | 59.2% | 40.8% |
| | Oct. | 564.0 | 1,398.5 | 1,962.5 | 1,490.2 | 3,452.7 | 16.3% | 40.5% | 56.8% | 43.2% |
| | 4 | USAID Estimates | | 2,102.8 | 1,497.2 | 3,600.0 | -- | -- | 58.4% | 41.6% |

SOURCE: GRZ, NCDP, Economic Review 1986 and Annual Plan 1987. January, 1987.

TABLE 9: Zambia's Money Supply, 1981-1986
(Percentage Changes)

| Period | Non-Bank | Demand | | Time | | |
|---|----------|-----------------|----------|--------|----------|-------|
| Year | Qtr | Currency | Deposits | M1 | Deposits | M2 |
| ===== | | | | | | |
| Year-on-Year Percentage Changes: | | | | | | |
| 1981 | 4 | -- | -- | 8.3% | 6.7% | 7.6% |
| 1982 | 4 | -- | -- | 20.1% | 40.1% | 29.1% |
| 1983 | 4 | -- | -- | 14.3% | 6.1% | 10.5% |
| 1984 | 4 | -- | -- | 8.6% | 23.9% | 15.8% |
| 1985 | 1 | 12.7% | 26.8% | 22.3% | 16.5% | 19.5% |
| | 2 | 15.6% | 29.4% | 25.1% | 5.0% | 15.4% |
| | 3 | 15.5% | 14.8% | 15.0% | 11.2% | 13.3% |
| | 4 | 18.5% | 42.2% | 35.0% | 4.5% | 21.2% |
| 1986 | 1 | 26.3% | 62.4% | 52.8% | 24.3% | 39.9% |
| | 2 | 20.6% | 59.5% | 49.3% | 39.5% | 44.9% |
| | 3 | 47.7% | 64.8% | 60.0% | 44.1% | 53.2% |
| | 4 | USAID Estimates | | 53.6% | 53.7% | 53.7% |
| Annualized Quarter to Quarter Percentage Changes: | | | | | | |
| 1984 | 2 | 24.6% | 27.2% | 26.3% | 29.3% | 27.9% |
| | 3 | 32.6% | 98.6% | 77.9% | -1.9% | 39.5% |
| | 4 | 32.2% | -30.2% | -10.7% | 45.2% | 15.8% |
| 1985 | 1 | -38.6% | 11.7% | -4.2% | -6.6% | -5.3% |
| | 2 | 36.4% | 37.7% | 37.3% | -16.9% | 11.7% |
| | 3 | 31.9% | 40.2% | 37.7% | 23.1% | 31.1% |
| | 4 | 44.2% | 79.2% | 69.1% | 18.3% | 47.2% |
| 1986 | 1 | -7.3% | 92.7% | 67.2% | 72.8% | 69.5% |
| | 2 | 13.4% | 26.0% | 23.1% | 43.8% | 31.9% |
| | 3 | 140.3% | 61.3% | 80.6% | 41.5% | 64.2% |
| | Oct. | 155.6% | 7.5% | 48.2% | 164.5% | 97.0% |
| | 4 | USAID Estimates | | 43.7% | 56.7% | 49.1% |

SOURCE: GRZ, NCDP, Economic Review 1986 and Annual Plan 1987. January, 1987.

TABLE 10: Estimated Labor Force and Employment, 1970-1986
(Thousands)

| Item | 1970 | 1975 | 1980 | 1986 |
|---|----------------|----------------|----------------|----------------|
| Population | 4,169.4 | 4,825.6 | 5,679.8 | 6,947.0 |
| Urban | 1,272.3 | 1,762.1 | 2,440.4 | 3,265.0 |
| Rural | 2,897.1 | 3,063.5 | 3,239.4 | 3,682.0 |
| Percent Urban | 30.5% | 36.5% | 43.0% | 47.0% |
| Total Labor Force | 1,264.0 | 1,503.0 | 1,761.4 | 2,154.0 |
| Participation Rate | 30.3% | 31.1% | 31.0% | 31.0% |
| Estimated Urban | 385.7 | 548.8 | 756.8 | 1,012.4 |
| Estimated Rural | 878.3 | 954.2 | 1,004.6 | 1,141.6 |
| Formal Sector Employment | 343.0 | 393.5 | 389.0 | 360.5 |
| Urban | 308.4 | 357.4 | 356.4 | 325.7 |
| Rural | 34.6 | 36.1 | 32.6 | 34.8 |
| Informal Sector Employment and Unemployment | 921.0 | 1,109.5 | 1,372.4 | 1,793.5 |
| Urban | 77.3 | 191.4 | 400.4 | 686.7 |
| Rural | 843.7 | 918.1 | 972.0 | 1,106.8 |
| Formal Sector Employment as Percent of Labor Force | 27.1% | 26.2% | 22.1% | 16.7% |
| Urban | 80.0% | 65.1% | 47.1% | 32.2% |
| Rural | 3.9% | 3.8% | 3.2% | 3.0% |
| GDP Per Capita(1970 Kwacha) | 304.3 | 298.0 | 241.2 | 187.5 |
| <u>Average Annual Growth Rates</u> | <u>1970/75</u> | <u>1975/80</u> | <u>1980/86</u> | <u>1970/86</u> |
| Population | 2.9% | 3.3% | 3.4% | 3.2% |
| Urban | 6.5% | 6.5% | 4.9% | 5.9% |
| Rural | 1.1% | 1.1% | 2.1% | 1.5% |
| Labor Force | 3.5% | 3.2% | 3.4% | 3.3% |
| Urban | 7.1% | 6.4% | 4.8% | 6.0% |
| Rural | 1.7% | 1.0% | 2.1% | 1.6% |
| Formal Sector Employment | 2.7% | -0.2% | -1.3% | 0.3% |
| Urban | 2.9% | -0.1% | -1.5% | 0.3% |
| Rural | 0.8% | -2.0% | 1.1% | 0.0% |
| Informal Sector Employment and Unemployment | 3.7% | 4.3% | 4.5% | 4.2% |
| Urban | 18.1% | 14.8% | 9.0% | 13.6% |
| Rural | 1.7% | 1.1% | 2.2% | 1.7% |
| GDP Per Capita(1970 Kwacha) | -0.4% | -4.2% | -4.2% | -3.0% |

ANNEX 2

ZAMBIA

AGRICULTURAL SECTOR BACKGROUND

by

Roberta Mahoney and James Snell

**Lusaka, Zambia
April, 1987**

Zambia

Agricultural Sector Background

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Zambia

Agricultural Sector Background

Much has changed in the Zambian economy since the last USAID/Zambia CDSS in 1983, and much of that change has occurred either in the agricultural sector or has directly influenced the performance of the agricultural sector. Zambia remains in a difficult economic situation, however, and even more reform will be required of the economy. Although initially unable to replace the mining sector's contribution to GDP, agriculture and agriculturally-related activities will bear the burden of providing gainful employment to Zambia's rapidly growing labor force, of maintaining economically feasible food production levels, and of providing the nation with needed foreign exchange. This reviews the status of the agricultural sector, and assesses the progress made, and that yet to be achieved, in attaining these goals.

I. Structural Characteristics

1. Land Use

Zambia is relatively well endowed with agricultural resources. The surface area of 76 million hectares includes approximately 60 million hectares of arable land. Much of this area, about 25 million hectares, is well suited to agricultural production. The balance of Zambia's land is tsetse fly infested, rocky, under water, forested, or devoted to game reserves. At the current population levels, this provides nearly four hectares of medium to high potential arable land per capita. The comparable figure for Kenya is barely one hectare per capita (USAID, 1986), and less than one hectare for Rwanda. In addition, most of the country receives adequate, though erratic, rainfall levels between 700 and 1400 mm per year. Other climatic and physical features are also favorable to agricultural production, resulting in an agricultural sector which has the potential of supporting the cultivation of a variety of crops and livestock.

Of Zambia's agricultural area, roughly one-half, or twelve million hectares, are cropped on an intermittent basis while twenty-five percent is cropped continuously. Therefore, although land use varies according to agro-ecological zone, land use relative to potential remains relatively low. To a great extent, this land use pattern continues to reflect the production technologies presently available, the skill levels of most rural producers, the economics of location, and governmental policies with respect to agriculture.

2. Structural Characteristics

Maize production dominates all aspects of Zambian agriculture. It is the single most important crop in terms of domestic production, cropped area, and the number of farmers engaged in production. In addition, it is the most common cash crop grown in the country, accounting for nearly 75 percent of the total marketed agricultural output. Maize is not, however, a significant export crop since maize marketing is limited to the domestic market and restrictions are placed on its export. Other important crops include cassava, millet, sorghum, groundnuts, tobacco, cotton, sunflower, sugarcane, rice, and soybeans. With the exception of tobacco and recently sugar and groundnuts, these crops are produced essentially for domestic production.

Of low production level but increasing importance are the horticultural crops grown for export to the European market. These crops include high value, and highly perishable, temperate and tropical fruits, vegetables and flowers. Finally, the livestock sector constitutes an important part of Zambia's agricultural profile. Cattle, estimated by the World Bank at 2.5 head earlier this year, are an important source of income and protein to many farmers. The importance of animal production is highlighted by recent Ministry of Agriculture and Water Development studies that have estimated that import dependent, capital intensive maize production is 20 percent more costly than ox-plow production methodologies. Animal production, particularly of the smaller livestock such as chicken and goats, is of increasing importance to the export sector as well. As the foreign exchange rate continues to shift to favor exports, Government and farmers' groups representatives have reported an increasing number of livestock exports to neighboring countries.

Less than one percent of the cultivated land, roughly 18,000 hectares, is irrigated. Of this total, nearly 50 percent is devoted to sugar cane production. The balance is devoted to wheat, tea, coffee, rice, and bananas. It is estimated that the amount of irrigated land is small when compared to the quantity of land which is potentially irrigable. However, it should be noted that irrigation can be costly, in terms of development, production technologies, and the environment, and care must be exercised in the further development of this potential.

Zambia's agricultural sector is strongly dualistic. Although no comprehensive study has been undertaken to determine exact numbers or proportions, the vast majority of farming units are smallholder, traditional farms. These constitute between 75 and 80 percent of all farms, and production technologies are dominated by hand tools and human labor. These farms, because of their numbers (estimated at between 390,000 and 550,000 units), produce most of the

nation's food and most of its marketed maize. In addition, it is estimated that many of these farming households engage in off-farm income earning activities such as bricklaying and woodcarving.

Zambia also has a very small number of highly mechanized, capital intensive large farms. The number of such farms is estimated to be between 600 and 800 (Zambia Commercial Farmers Bureau), and constitutes approximately one percent of the total farming units of the country. The average farm size for this group is 60 to 100 hectares. Depending on the numbers utilized in the estimation, this implies that the capital intensive, commercial farming units account for roughly three to five percent of the currently cultivated land. These farms produce maize, wheat, soybeans, and in some areas, cattle. It is estimated that this group produces, on average, 30 to 40 percent of the country's marketed maize, and up to 60 percent of the total volume of officially marketed agricultural commodities. This group, too, is the one which has responded quickly to recent changes in the exchange rate to increase horticultural exports. Production among members of this group is not always the most cost efficient, however, as the recent Ministry of Agriculture and Water Development (MAWD) production cost estimates for maize production show.

One last, but highly significant, group of farmers exists between these two extremes. Representing 20 to 30 percent of total farms, between 60,000 and 125,000 units, are the emergent farmers. Production within this group is not as capital intensive as with the commercial group, but these farmers are commercially oriented nonetheless. Farmers in this group use appreciable quantities of modern inputs, including fertilizer, improved seed, and animal or mechanical traction. Their farm sizes range between 10 and 15 hectares and account for approximately 15 percent of the total area of currently cultivated land.

It is this segment of the farming population which has the best capacity, over the long run and for the greatest number of people, to respond to the agricultural challenges facing Zambia. As copper reserves diminish, an ever increasing number of skilled and semi-skilled workers will seek productive employment in the non-mining sectors. Considering the sheer numbers of people involved, many must seek those jobs in agriculture directly or in agriculturally-related activities. This emergent farmer sector is the one that may best utilize the organizational, production, and mechanical skills offered by the declining mining sector.

3. Agro-ecological Zones and Location

Zambia's land area has been divided by the FAO into four agro-ecological zones representing different levels of appropriateness for agricultural use. The characteristics of each zone are summarized as follows.

a. The Intermediate Plateau Zone (I)

This zone, which generally contains the most fertile soils in Zambia, covers the plateau of Southern, Central, and Eastern Provinces. Annual rainfall is quite adequate and soils are mainly in the range of pH 5.0 to 6.5. The zone covers about 13 percent of the total land area. In addition, this area is served by the best transportation infrastructure in the country. This zone accounts for almost 60 to 70 percent of all agricultural production, over 50 percent of all officially marketed production, all the country's large commercial farmers, and most of its emergent farmers. According to the 1969 population census, approximately 30 percent of the rural population lived here, and the zone had a population density of 8.6 people per square kilometer. By 1985, based on the 1980 census, the area was estimated to continue to account for about 30 percent of the rural population, but the population density had risen to 11.1 people per square kilometer. This is the highest rural population density in Zambia, and represents a density level more than twice the level of the next most agriculturally appropriate zone.

b. The Northern Highland Rainfall Zone (II)

This zone, comprising the major parts of Northern, Luapula, Copperbelt, and Northwestern Provinces, occupies about 46 percent of Zambia's total land area. Annual rainfall is in excess of 1000 mm, and soils are classified in the moderately severe to severe acidity range. The largest proportion of traditional farms operate in this area.

c. The Western Semi-Arid Zone (III)

This area includes the majority of Western Province and the Zambezi District of Northwestern Province. Annual rainfall varies from 600 to 1000 mm, with a great diurnal variation in temperature. Soils are slightly to moderately acidic, apart from an area of extreme acidity east of Mongu, and there are large areas of infertile sands suitable only for grazing. This zone covers 28 percent of the total land area.

d. The Low Rainfall Zone (IV)

The boundary of this zone is defined by the rift system of the Luangwa and by the Zambezi valley below Livingstone. It receives 600 to 800 mm of rainfall annually, has slightly alkaline soils, and covers approximately 13 percent of the total land area. This area is not well suited to agricultural activities.

4. Rural Labor Force

With the exception of the Republic of South Africa, Zambia is the most urbanized country in sub-Saharan Africa. In spite of this distinction, however, the majority of Zambians, approximately 53 percent of the population, reside in rural areas. Relatively little is known about the rural labor supply, or about its skill base. It is known, however, that as a result of the mining activities, Zambia has a relatively disciplined urban labor force which may well be seeking employment in agriculturally-related activities in the future. Certain opportunities exist, and others may be developed, in rural areas. Therefore, an agricultural strategy must be cognizant of the access to a skilled labor force for support industries.

5. Market Structure

Traditionally, agricultural marketing in Zambia operated on two levels. On the first, marketing and distribution of most non-perishable crops and inputs have been controlled by the central government through the use of parastatals. On the second, the private sector has been allowed to operate, in an unhindered fashion, with respect to most perishable crops. In addition, official prices for several crops, including sorghum, millet, and beans, have tended to be below prevailing prices in rural markets. Therefore, the private sector has accounted for much of the marketing of these items, with the public sector operating as the buyer of last resort. This situation has changed significantly in the recent past as the Government of Zambia has undertaken a series of marketing reforms. Now, consumer prices of all commodities, with the exception of maize, have been decontrolled, and the public sector is allowing more widespread participation in marketing and distribution activities by the cooperatives and the private sector.

Zambia's maize pricing system remains the subject of substantial controls, however. Prices are administratively determined and are pan-territorial and pan-temporal. The prices are calculated on the basis of production costs of large commercial farmers, fair returns

to the producers, fair consumer prices, concern regarding relative crop prices and profitability, food security, and political acceptability. The difference between a fair return to the producer and a reasonable price to the consumer has led to a series of market distortions. The differences in the producer and consumer prices have lead the Government to finance increasingly large subsidies on the consumer price of maize. This low consumer price, in turn, has led to an overconsumption of maize relative to the level which would be consumed were the price not subsidized.

Compounding this situation have been the pan-territorial and pan-temporal pricing policies which have encouraged the overproduction of maize in less suitable and more remote areas than market determined prices would support. In addition, these policies have transferred the grain storage burdens and costs to the central government. Finally, since the producer prices are determined on the basis of commercial farmer production costs, and since these costs are higher than those faced by the less capital and import dependent traditional and emergent farmers, further distortions occur. A more costly, capital intensive mode of production is artificially supported, and disproportionate rewards are offered to the less capital intensive farmers, thereby increasing the stimulus for greater production in otherwise inappropriate areas.

Although the results of certain distortions may be desired, for example encouraging less capital intensive ox-plow maize farming, these results can be achieved in a less costly and more efficient manner through the use of market, rather than administratively determined prices. The more costly mode and location of production should be recognized as uneconomic relative to more efficient production methodologies and locations, and only the most efficient producers, in all senses of that word, would continue to produce maize.

In response to growing pressure to remove some of the distortions pertaining to agricultural, and especially maize, marketing, the Government has undertaken various reforms over the last few years. These included decontrolling the consumer prices of all consumer commodities, with the exception of maize meal, wheat, fertilizer, and candles by the end of 1982. Next, wheat prices were decontrolled in November, 1984. Coinciding with this last decision, the Government undertook a three year program to eliminate subsidies on maize and fertilizers. These reforms have been difficult, especially when considered in conjunction with the exchange rate reforms resulting from the auction system.

In addition, a number of factors (as discussed in detail in the Political Annex), but primarily poor implementation of certain reforms, notably the overnight elimination of the breakfast meal consumer price subsidy, has caused the Government to retreat from some reform measures. Nonetheless, we believe the Government remains committed to sustaining the reforms, albeit on a more prolonged schedule than originally envisaged. In addition, in order to minimize the effects on both producers and consumers of subsidy removals, the Government has adopted a policy to reduce marketing inefficiencies and costs. This policy allows broad participation by parastatals, cooperatives, and private firms in the maize and fertilizer trade. Although these reforms, and others, are still being implemented, certain responses are already apparent. These changes are discussed in the next section.

II. Agricultural Sector Performance

1. Price and Market Liberalization

Zambia has undertaken a number of significant reforms in agricultural marketing, as noted above. These reforms include the total decontrol of consumer prices for most commodities. The only exception to decontrol has been breakfast and roller meal maize prices, although these prices had been substantially increased in 1985. As a result of pricing changes, farmers have enjoyed increasing real prices for their crops. In real terms, the producer price of maize has been increasing each year since 1979, with significant improvements in the most recent years. Since 1979, the real price of maize has been greater than the equivalent 1975 price and by the current crop year real producer prices were 70 percent greater than they were in 1975. Sorghum prices have also improved, though not as markedly as those of maize. For the first time in over a decade, real prices are finally greater than they were in 1975. Farmers have responded to these increasing price incentives by both increasing production and increasing the proportion of production which is marketed. After the 1980/81 production peak for both crops, production and marketed produce fell dramatically in the 1981/82 crop year. Maize and sorghum production have steadily improved since then and now meet or exceed the earlier production levels. Maize production continues to dwarf all other food grain crop production, though production improvements have also occurred in soybeans, rice, and wheat.

In addition to price liberalization, the Government has allowed greater freedom in the marketing and distribution of agricultural crops. Parastatals no longer have monopsonistic control over the purchase and

distribution of food grains although they do exert a strong price leadership role in marketing. This reform has been undertaken to increase marketing efficiencies through competition with the cooperative and private sectors. Unfortunately, the Government's recent move to nationalize the maize millers represents a strongly retrogressive step in their overall reform program. Also, the Government has undertaken actions to reduce the subsidy on fertilizers in order to encourage a more efficient use of this scarce and costly resource. Again, the marketing of this commodity has been opened up to cooperatives and the private sector; however, remaining subsidies and price restrictions limit the market competitiveness of the non-parastatals.

As mentioned above, the Government has undertaken a series of reforms to reduce maize and fertilizer subsidies. In 1985, the consumer price of maize was increased by an average 10 kwacha per bag which resulted in a subsidy reduction of over 40 percent. In addition, the government recently announced a Namboard to brewers and livestock feed manufacturers maize price of 70 kwacha per 90 kg bag, up from 35 kwacha per bag. This has resulted in a further reduction of the maize subsidy. Early in 1986, fertilizer prices were increased which effected a subsidy reduction of over 35 percent. Later in 1986, fertilizer prices were increased again, by a nominal rate of over 56 percent, which resulted in a further fertilizer subsidy reduction. Thus, the Government has been moving ahead with the reduction of expensive subsidy payments. The Government is, however, chasing a moving target on fertilizer subsidy reduction as the kwacha continues to depreciate as a result of the FX auction.

2. The Auction

The two great achievements of the auction system have been that it has provided a mechanism both to establish a fair market price for foreign exchange, and that it has provided a fair and honest allocation mechanism for that foreign exchange. Both of these attributes have had a profound impact on the agricultural sector. In terms of the domestic price, there is little doubt that the cost of imported components have risen greatly. However, producers are now able to either bid directly for foreign exchange (or utilize their own retained foreign exchange generations) and import their requirements or purchase the items from local importer-retailers. Therefore, although prices have risen, commodities are more freely accessible and more competitively procured. The auction has also had positive implications for the capacity utilization of domestic industries. Although the statistics are not yet

available, preliminary estimates indicate that capacity utilization has increased generally by over 10 percent in the last year. Kwacha devaluation has increased the competitiveness of Zambian production as imported goods, in terms of processing components and final products, become more expensive relative to locally produced goods. It is this increasing competitiveness which has resulted in increasing capacity utilization.

The real incentives to agriculture have come to the export sector. Again, exact numbers are not available, but the Zambia Export Growers' Association (ZEGA) estimates that the volume of non-traditional, horticultural exports has more than doubled since the auction was initiated. Moreover, the Association estimates that such exports will again more than double in the year to come. In another example, ZAMHORT, a parastatal active in fruit and vegetable exports, has seen the volume of its exports increase from 16.1 metric tons in the 1984/85 season to an estimated 438.3 metric tons for the 1985/86 season. This is a nearly 30 fold increase in just one year. In nominal terms, the value of these exports increased from K124,000 to K2,217,600 over the same period.

The Zamhort figures are particularly revealing because they represent, in general, second tier exports. This is production for which the farmer receives not foreign exchange, but kwacha. By convention, these exports represent those items which the farmers could not otherwise export directly. The figures also represent production from the smaller, commercially oriented farmers who are unable to engage in direct export activities due to the limits of size and difficulties posed by breaking into the London, Paris, and Frankfurt based export markets. Given these dramatic increases in agricultural exports, of increasing concern is the lack of adequate cargo capacity to African countries as well as European destinations for these products. The capacity problem is compounded by timing: in order to maintain strict quality standards, the produce must be picked and exported on a timely basis. Thus, an extra cargo plane a week is of less assistance than increased space on regularly scheduled commercial flights. The limited nature of the space available suggests that exporters will have to plan far ahead to secure cargo space until individual exporters or groups of exporters grow large enough to charter planes on a regular basis.

Exports to neighboring countries have also increased with the real devaluation of the kwacha. The Commercial Farmers Bureau reports significant increases in the volume of small livestock, fruits, vegetables, and other foodstuffs exported to Zaire, Malawi, and other neighboring countries.

3. Import and Export Parity Prices for Food Grains

Import and export parity prices were calculated in order to evaluate Zambian production efficiencies relative to the commodity price and foreign exchange reforms undertaken by the Government. Prices of maize, wheat, and rice imports were estimated for world market sources shipped by any carrier to Dar-es-Salaam and South African ports. Transportation costs by rail from the port to Lusaka and on to consuming provinces were then taken into consideration. Similar calculations were undertaken, in reverse, for export parity price purposes. In addition, comparisons were made to imports from Malawi and Zimbabwe when appropriate.

In all calculations, current prices paid to Zambian producers are below import parity prices. This is a direct result of the introduction of the auction system and reduced control of producer prices, and represents a major achievement for Zambian agriculture. One production season ago, producer price and foreign exchange rate distortions suggested that Zambia could not be a competitive producer of food grains. This was not in accordance with the resource endowment of Zambia, however, which suggested that the country had the natural resources to yield abundant food grain crops in a cost competitive manner. It was the policy, and not the physical, environment which acted as a constraint on the competitiveness of production. This situation has changed as rapidly as the exchange rate. Now, it is far less expensive for Zambians to consume their home grown grains rather than imported ones. This even applies to Malawi, one of the region's low cost maize producer. In the past few months the policy reform changes have made it more cost effective for Zambians to produce and consume their own maize than to import Malawian maize. Moreover, with respect to all crops considered, producer prices are approaching export parity prices. This indicates that under the current exchange rate and pricing policies, Zambian surplus grain production could be competitive on the world market.

This change is good both for the Zambian producer and consumer. The producer now faces more attractive incentives to production. Both in terms of establishing a more realistic exchange rate which no longer subsidizes imports and in terms of establishing a series of decontrolled, or less controlled, prices encourage the farmer to increase production. The farmers, in response, have increased their production. Total maize marketing this year is estimated at a record level of 10.6 million bags. Wheat and rice production are also up dramatically. The nation now faces the prospect of self-sufficiency in maize. In addition, if current production trends continue, self-sufficiency in wheat production may also be achieved in the not too distant future.

This analysis belies the fact that there are more changes in Zambian agricultural production required before an economically efficient production scheme evolves. For example, much variation exists in the production and transportation costs for these commodities by geographical and farming unit type. In general, Ministry of Agriculture and Water Development estimates show that ox-plow production methodologies applied to maize production result in costs which are 78 percent of those faced by the import dependent, capital intensive maize producer. Similarly, due to the high intra-Zambian transportation costs, it is more efficient for those areas which are well serviced by transportation links to produce high bulk, low value commodities such as maize.

4. Agricultural Incomes

Without complete information on price increases and the volume, value, and distribution of participation associated with agricultural production and exports, it is difficult to estimate accurately the impact of the recent reforms on agricultural incomes. In addition, studies do not exist which would help define meaningful levels and categories of rural incomes. Therefore, estimates of rural incomes in general, and those by farming unit type in particular, are impossible to determine. It is possible, however, to look at the average impact on farm incomes of the macro-economic and agricultural reforms which Zambia has undertaken during the last year. Again a complete analysis is not possible since accurate statistics are not available for smallholder production. However, as we have seen, maize is the dominant crop being produced in Zambia, and it is possible to estimate the impact of increased maize production and prices on real farm incomes over the past year.

Total estimated maize production in the most recent season, 1985/86, showed a twelve percent increase over the previous season. In addition, marketed produce showed even stronger growth, increasing by almost 50 percent over the previous year. Farmers were clearly responding to better producer prices, combined with subsidized consumer prices, to market a greater proportion of their maize. At the same time that the marketed value of their produce was increasing, the value of their retained production also increased with increasing producer prices. As a result of these changes, both in production and in prices, the value of the 1986/87 maize crop produced by non-commercial farmers nearly doubled when compared to the value of the previous season's crop. In addition, it is assumed that fertilizer use by this segment of the farming population has always been low and that any change which might have occurred in the last year would have been decreased

consumption due to increasing prices. The net effect of increased fertilizer prices on this particular segment of the farming units, therefore, is considered to be nil. Using the estimate of 580,000 traditional and emergent farming units as the producers of this non-commercially produced maize, the figures suggest that, on average, income to each farm has increased by nearly 500 kwacha in nominal terms as a result of the reforms. Deflating this amount by the estimated increase in the consumer price index over the same time period suggests that the real increase to the average rural farm income has been about 315 kwacha.

While these figures pertain to the differences between the last two seasons, the relative position of rural sector incomes vis-a-vis urban sector counterparts has been improving. This observation is supported by an analysis of real producer prices for maize which show that these prices, when deflated by changes in the Consumer Price Index over the same time period, show substantial real increases since 1979. At the same time that agricultural incomes have been increasing, the wages in the urban, formal sector have declined in real terms. Statistics which are available indicate that by 1983, real urban wages had fallen to between 45 and 90 percent of their 1975 level. The more dramatic decreases have been in higher income positions whereas the less skilled, lower income positions have not suffered as much. Urban wages since 1983 have not increased as rapidly as inflation, indicating a further decline in real wages. As a result of the changed real prices for agricultural production, of the increases in agricultural production, and the fall in real urban wages, the strong urban/rural differential which has characterized the Zambian economy for so long has been significantly reduced.

III. Remaining Constraints to Improved Performance

1. Definitions

Improvements to agricultural performance are defined as increases in production and yields, greater agricultural incomes, improved nutritional status, decreases in post-harvest losses, increased use of market mechanisms in production and distribution activities, increases in agriculturally related employment, and more equitable distribution of rural incomes resulting from increases in the income earning opportunities of the rural poor. This section discusses those procedural, administrative, infrastructural, and technological constraints which stand in the way of such improvements.

2. Policy Considerations

In spite of the many changes which the Government of Zambia has undertaken with respect to agriculture, policies persist which undermine rational production methodologies and choices. The remaining policy constraints affect both pricing and marketing. On pricing policies, the Government continues to impose administratively determined producer prices for maize as well as the Namboard price to millers and the consumer price of breakfast and roller meal. While all of these prices relate solely to maize, maize continues to be the single most important agricultural crop in Zambia. Moreover, because the major price interventions have taken place on behalf of maize, relative prices for maize vis-a-vis other food grains have become, and continue to be, distorted. Therefore, reform on these policy issues is an important step to rationalizing maize production in the country. In addition, the Government, though it has endorsed the idea of seasonal and regional variation in agricultural prices, continues to administer pan-territorial, pan-temporal prices.

The Government has adopted a number of policy changes to remove some of the distortions caused by the above policies. These include adoption of moves to decontrol certain prices, to reduce subsidies offered on others, and to support the ideas of regionally and seasonally differentiated prices. These changes are very difficult to implement, however, as they increasingly demand real reform in the maize sector which is politically difficult for the Government. Thus, steps should be taken which will result in an increased capacity on the part of Government to understand, support, and implement these policy reforms.

As noted, the short term adjustment costs of these reforms are likely to be high, and may well appear contrary to the Government's long run objectives. One example is the possible fall in maize production, certainly from the more distant and less suitable areas. This can be expected to be matched, however, by a fall in the demand for maize as the prices increase and possibly a production increase in those areas best suited to maize production. Production and demand for other food grains are both expected to increase. Thus, the net impact on the goal of food grain self-sufficiency should be positive. Finally, as subsidies are reduced, the Government will have more flexibility regarding budgetary allocations. In this regard, if the purpose of maize subsidies has been to ease the burden of staple food prices to the poor, the subsidy instrument which was

chosen was too blunt since both rich and poor benefitted from the lower maize prices. If the Government so chooses, it will be able to redirect the use of those funds previously spent on the maize subsidies to support activities which are more defined and direct in their impact on the poor. Thus, rationalized maize pricing policies have the advantage not only of making the maize and agriculture sectors operate more efficiently, but also of providing the Government more discretion over the expenditure of its resources to meet its longer term political commitments.

With respect to marketing policies, the Government faces cost savings and increased autonomy from policy reform. The cost of marketing subsidies includes not only the margin on maize to cover the shipping and handling fees associated with the maize purchase and distribution system, but also include the added costs of transportation and storage which accrue as a result of the the increased volumes officially marketed and transported due to the above mentioned pricing policies. Finally, there are the operating costs of the parastatals themselves. While the operational objective of the parastatal may not be to make a profit as is the case with the private sector, nonetheless a surplus is extracted from the nation in order to fund the operations of the parastatal. Again, this may not be the most efficient allocation mechanism available for assisting the rural poor.

The Government is beginning to recognize the operational inefficiencies of some parastatals engaged in certain activities. This move away from fixed parastatal interventions should be supported, and offers an example of implementation of a stated policy forming the bottleneck to realized reforms. As with the gains in autonomy over expenditures resulting from reductions and elimination of subsidies in maize production and consumption, similar gains will also accrue to marketing reforms. Most immediate will be reductions in expenditures once marketing subsidies are removed. Then, as the role of the parastatals is diminished and the parastatals themselves are dissolved, central government expenditures will be further reduced. This will provide the Government with an additional opportunity and the financial means to be precise in targeting assistance to meet the needs of the poor.

3. Land

The current land tenure system is an amalgamation of traditional, colonial, and post-independence rules of ownership and access. The existing system is highly

dualistic where customary access rights are presumed to apply to the majority of the land, and long-term leases apply to a very small percentage of the land. Moreover, these leaseholds cannot be sold from one tenant to another. Thus, a situation exists for those governed by customary tenure rules whereby title, and therefore loan collateral, is unavailable. Few farmers are able to make capital improvements to their land or production methodologies without the use of loan capital, and little increase in production, yields, or income can be expected without such improvements. This constraint is assumed to affect the emergent farmers most directly.

Problems also exist for the leasehold farmer. While this farming family has some security of tenure, and has a leasehold title against which to borrow, the farming unit itself is reluctant to make long term capital investments to the land since the value of most of these improvements may not be recouped through sale or inheritance. This farming unit faces incentives to invest in mobile capital equipment, such as tractors, which can be utilized to increase short term production and can later be sold if required. In both situations, farmers face reduced incentives to invest in the long term productivity of the land.

In addition, although Zambia has relatively abundant land reserves, the distribution of these reserves is such that there are areas of intense usage which are being subjected to over use, land degradation, and soil erosion. In these areas, pressure for increased allocations of state lands has arisen. A unified opinion regarding the effect of a land tenure system on agricultural production does not yet exist. This is due to the complex nature of legal tenure systems, as well as the more complex nature of the implementation and use of these systems. Thus it is assumed that in those areas governed by traditional land tenure rules, utilized for traditional production methods, and not subjected to population pressures, that the particular form of land tenure is not an important determinant of the level of agricultural production. On the other hand, in those areas subject to population pressures, where more modern production methodologies are used, and usufruct rights have dissolved, land tenure could be considered a constraint to expanded production.

In addition to the access to land and capital questions, the current implementation of the land tenure system which provides "land without cost" exacerbates the problems of removing agricultural subsidies. Leasehold

land entails the rent of eight ngwee per hectare, or far less than one cent per acre. No differential is charged which reflects the location or other natural attributes of the land. Nor, in the case of newly opened lands, does a mechanism exist which reflects the development costs of that land. When the nominal rent of land is fixed, the "economic rent" resulting from location and introduced or natural attributes, accrues to the leaseholder. This, in effect, is a subsidy to the leaseholder.

Were the price of land market determined, the price of particularly well suited or well located agricultural lands would be "bid up" by the market mechanism. As the landowner, this would directly benefit the Government of Zambia. As the price of certain lands increases, efficient utilization of the land would be increased. That is, production choice decisions would be made according to economic efficiency criteria: the land would be used for the most productive purposes for which it would be suitable. Moreover, the marginal efficiency of all productive lands would be equated. This will not happen under the current implementation of the land tenure system. Instead, those farmers fortunate enough to have land near transport arteries or consumption centers will continue to reap the unearned profits of location.

4. Labor

Zambia has extensive land resources and, by comparison, restricted human resources. Given current production technologies, the relative lack of labor imposes at least a seasonal constraint on production levels. Therefore, mechanical, technical, and capital additions must be used to enhance human labor in order to increase production levels. Not all farmers are aware of appropriate levels and uses of such interventions. Therefore, in terms of changing technologies, a large proportion of the rural population lacks requisite skills, as well as capital as noted above, to adopt changed production methodologies. Emergent farmers, however, are starting to acquire just these skills. In the near future, former mining sector workers will also be added to the available labor force. While these individuals may lack farming skills, they will enter the job market with other skills which can be used directly in farming or in farming support activities. This could be of tremendous importance to the development of agriculture in Zambia.

5. Credit

Credit has frequently been mentioned as a factor constraining agricultural development. In part, this

reflects disincentives faced by the banking community in lending to farmers. It also reflects the generally conservative nature of banks and their reluctance to make a large number of low volume, high administrative cost, seemingly poorly secured medium and long term loans. This is not to say that agricultural lending is impossible, but rather that it has characteristics which differentiate it from other forms of lending and which make it more difficult and often more costly to undertake.

Disincentives faced by the commercial banking sector include the current interest rates which remain negative due, in part, to the reintroduction of interest rate controls. Under such circumstances, the bank is reluctant to further jeopardize its operations by undertaking a series of long term loans for which the negative returns situation is exacerbated. If such banks continue to lend at all, it will be for short term purposes in the hope that future lending will be undertaken at positive real interest rates. Also affecting this situation is the commercial bank's desire for collateral. Since most of the traditional and emergent farming units do not hold title to their land, they are considered unsecured, and highly unattractive, loan prospects.

Lending reluctance and negative returns are two very different problems which have elicited a single response on the part of the Government: creation of a parastatal agricultural lending institution. Several different institutions have been created in succession, with each in the sequence succumbing to largely the same problems of poor management, very low repayment rates, and rapidly depleted capital base. Compounding this situation has been the fact that the successive institutions have inherited the financial liabilities of their predecessors. Thus, even with prudent management of resources, the successive institutions are disadvantaged from the start. A viable credit program cannot exist on the basis of quickly depleted capital inflows from central government. Rather, it is necessary to establish a self-sustaining system whereby real savings rates are positive so as to encourage savings, and real lending rates are also positive so as to encourage the banking sector to lend.

Recent reintroduction of interest rate controls has come at a time when structural adjustments are being made in the economy in response to the macro-economic reforms. The adjustments, and manipulation of the adjustments as happened in some of the auctions in 1986, are creating a period of economic uncertainty in Zambia which have resulted, in part, in a series of moving economic targets. An example is the past interest rate decontrol which left negative interest rates in real terms as

the rates have increased significantly, but not by as much as recent estimates of changes in the consumer price index. The reintroduction of interest rate ceilings once again has introduced a degree of uncertainty in the management of the economy.

Stability and positive real interest rates will go far in meeting the seasonal, medium, and long term credit needs of the country. Alone it cannot meet all the needs, however. Still to be overcome is the reluctance for unsecured lending. This implies a different approach to lending, such as through social and farming groups, cooperatives, or similar associations, where social pressures to repay can be substituted for land titles. (A much longer term solution may lie in issuance of land titles, but this is a remote, and not necessarily acceptable, possibility.) The agricultural lending institution must be required to develop, and implement, alternative methods of ensuring repayment. Selective non-repayment is a privilege offered only to those few who are able to secure the loan in the first place. A more equitable situation, for the farming community as well as for the Government, requires the availability of resources to fund credit-worthy activities, where credit-worthiness is defined in terms of economic performance criteria. In this manner, the resources are made available, repeatedly, for improvements in agricultural production and productivity.

For both large and small producers, the lag involved between increased input and output prices has exacerbated the farmer's cash flow problems. Producers buy fertilizer at the new prices, but their cash position is based on last year's output price. This problem of cash flow lag will remain until the Government of Zambia eliminates the subsidies to maize and fertilizer, and all prices, with a futures market component, are market determined.

Finally, it will be necessary to review the inherited financial liabilities of the agricultural lending institution with regard to adopting a repayment schedule which the institution is financially capable of meeting. These pose a series of substantial reforms which will markedly improve both the level and accessibility of agricultural credit.

One last area of credit for the agricultural sector is quite distinct from agricultural credit. This is the area of export credits and guarantees. In order to take better advantage of the benefits accruing from the auction system, agricultural producers and others who face export opportunities require a system of credits and guarantees in order to become established exporters. This point is reiterated under the institutional discussion.

6. Entrepreneurship

Problems of developing entrepreneurial skills are endemic to all aspects of economic development. Agriculture is no exception. The intent is to develop a class of agricultural producers who are productive, efficient, attuned to market sensitivities, innovative, and resourceful. This is no easy task, especially given the relatively low standard of practical education which characterizes the formal educational system. It is typically a burden which rests with the Ministry of Agriculture's extension program. Fortunately, Zambia already has a number of skilled and productive farmers at various farm size levels. In addition, the country has farmers' groups which represent farmer's interests and share information, skills and resources.

These agricultural entrepreneurs are the farmers most able to respond to improvements in the foreign exchange rates to increase regional or European exports, and to take advantage of changes in domestic relative prices to increase profitability. Their existence is not, by any measure, restricted to the large, commercial farming sector. In the short run, the problem will be to identify and support those entrepreneurs who currently exist, and provide the policy and infrastructural support they require to be their most productive.

In the medium term, changes in the research and extension programs must be undertaken which will concentrate efforts on the emergent farmer group. This will require research, extension, and dissemination of information on improvements in those crops which the smaller farmer grows principally as a combination subsistence and cash crop. Recent successes have included open-pollinated maize and high yielding sunflower and soybean varieties which have been introduced to the small scale farmer. This program requires further support to continue and expand. Finally, there are a large number of farmers who have very few entrepreneurial attributes. Improvements in the educational and extension systems, as well as within research, form part of the long-term solution to this problem.

Another advantage which faces Zambia's agricultural sector is the number of skilled workers in the mining sector. As has been stated earlier, these workers represent a resource in terms of the opportunities they present to the broadly defined agricultural sector. It is important that an environment be established which is conducive to the utilization of these skills before vast numbers become unemployed. It is likely that these skills

can best be used in the areas of agro-industrial processing and in agricultural sector support industries. Examples of such industries might include the manufacture and maintenance of farm machinery, including ox-plows, hullers, grinders, mills, pressers, and gins, as well as the processing of agricultural produce for domestic consumption and export. The recent changes in the exchange rate have made such domestic processing activities financially attractive. Changes in the interest rate structure, defined as a move to positive real interest rates, to facilitate lending to these firms will also be required to encourage this sector's expansion.

7. Institutional Constraints

Zambia faces constraints from several types of institutions which must be overcome in order to further its agricultural development. For the purposes of this discussion, these institutions include government and public sector entities (inter alia, the Ministry of Agriculture and Water Development and the Lima Bank), transportation and communications services, storage facilities, and manufacturing and processing establishments. The constraints related to the public sector, e.g., pricing policies, extension, and credit availability, are discussed above. This section addresses the problems of transportation and communication services, storage facilities, and manufacturing and processing facilities.

Domestic transportation services to the agricultural sector fall far short of the demand for such services. The reasons for this are related to issues concerning both the demand for, and supply of, such services. Demand for transportation services in agriculture, particularly in maize, is artificially high as a result of the pan-territorial prices offered for maize and the uniform consumer prices for processed maize meal. As a result of these policies, the grain is often shipped a considerable distance from a remote production point, processed, and then shipped back to the point of production for consumption. Prices which are differentiated both with respect to time and to location would reduce greatly the excess demand for transportation services.

The supply of transportation services, in turn, is limited by factors related to the availability of foreign exchange. These are the deteriorated status of the roads, truck fleet, rolling stock, and rail beds. Since the majority of domestic grain production is transported by road, and since the rail sector has such strong regional implications, the following discussion is limited to the domestic road and trucking sectors.

The condition of the roads has fallen markedly in recent years as the supply of foreign exchange used to purchase spare parts for the maintenance fleet and for paving and other road maintenance materials has dwindled. In addition, the use of international construction firms instead of local firms, as a means of substituting for the maintenance equipment, is limited by the same lack of foreign exchange. This problem is compounded by growing government deficits and the low priority accorded road maintenance in central and local government budgets.

The operational status of the national trucking fleet has also deteriorated as a result of the scarcity of foreign exchange. The importation of new vehicles has been severely curtailed in recent years. Vehicular registrations with NAMBOARD for the current season show only 670 privately owned and 150 parastatally owned vehicles as potentially operable and interested in the transportation of maize. Although the current auction system allows better access to foreign exchange, the kwacha has depreciated so significantly against other currencies, and credit is so relatively expensive and scarce that, under the present set of transport rules, there will be limited importation of trucks for the near future.

Money for the importation of spare parts has also been in short supply in the recent past. Again, although the funds are now more accessible, the price is quite high. As a result, spare parts are beginning to enter the country, but prices have risen appreciably. The availability of spare parts is particularly important given the average age of the fleet: the average age of trucks registered with NAMBOARD for the 1985/6 marketing season was 10.3 years (Landell Mills and Associates, 1986). The shortage and price of foreign exchange has also severely reduced routine maintenance of these vehicles which has resulted in lower operating efficiency levels for the fleet. If pan-territorial pricing, and transportation subsidies, are in fact abandoned, it is likely that the increased transportation costs and the reduced producer prices will combine to effectively reduce the demand for the transportation of high bulk, low value commodities such as maize to and from remote rural areas.

Problems also exist with the international transportation links which are vital to Zambia's existence. The problems of distance, cost, politics, insurgencies, and capacities as they relate to the railroads and ports are well known and discussed in greater detail in other places. To these problems must be added the possibility of an air cargo space constraint which, as noted earlier, may soon limit the growth of

horticultural exports. As part of the implementation of reform measures, a study could be undertaken to analyse the nature and extent of this constraint with the objective of proposing methods of alleviating it through the use, for example, of intermediary points, alternate destinations, and charters.

To date, communication linkages, outside the extension system, have posed little impediment to agricultural development. Under the pan-territorial, pan-temporal pricing policies, prices were controlled and, therefore, little variable pricing information existed to communicate. As prices are increasingly market determined, communications will increase in importance so that the less advantaged, more remote farmers are not unduly penalized for their situation. A market information system for commodity and input prices by locality will be required if production and marketing decisions are to result in an optimal allocation of resources. Thus, this type of activity is part and parcel of policy reform implementation. In addition, the changing information will need to be collected by government ministries for the purpose of policy assessment and formulation. If this information is not assembled, distributed, and made the property of the public domain, the information itself may be exploited by the private sector traders. If this happens, support for policy reform will be seriously undermined. Therefore, without careful planning, the compilation and exchange of information may well become a serious constraint to continued reform and future development.

The national storage capacity for maize is estimated to be 460,000 MT. This exceeds national demand by an estimated 10,000 MT (Landell Mills and Associates, Chapter 2). The bulk of these storage facilities are held by NAMBOARD and the Provincial Cooperatives Unions, with little held by the private sector. This situation is in direct response to the pan-temporal, pan-territorial pricing policy which effectively transfers the burden, and costs, of storage from the producer to the central government. With a move away from pan-temporal pricing, and a move for NAMBOARD to become a buyer of last resort and holder only of strategic grain reserves, the public sector will have excess storage capacities. The distribution of this capacity, through sale, lease, or rent, is another example of the implementation demands of policy reform.

Grain is also stored on the farm and by primary societies. Recent FAO statistics indicate that the quality of this storage is, in general, very poor. Their statistics estimate that losses of 10 - 15 percent for

on-farm storage would not be uncommon. Most on-farm storage is of the ventilated wooden crib with thatched roof type, and very few are of the mud or cement reinforced basket type. Primary societies often rely on outside storage under tarpaulin covers on a log base for marketed production. These storage methods leave the harvest vulnerable to weather and to pests, and will become increasingly inappropriate as producers move toward more vulnerable high yielding varieties, and as price policy reform encourages more on-farm grain storage.

Fertilizer storage capacity is more than adequate to meet current demands, and the quantity, if not the quality, of storage is reasonably well distributed throughout the country. Current estimates show storage capacity at 195,000 MT and current demand at 170,000 MT (Landell Mills and Associates, Chapter 2). Approximately 100,000 MT of storage are located along the line of rail, with the balance distributed throughout the country. As fertilizer and maize prices are decontrolled, it is difficult to estimate the exact response that the changes will have on the demand of fertilizer. However, given that many observers estimate that current policies have supported an excess production of maize and an over utilization of fertilizer, it can be expected that the future demand for fertilizer will fall. If this happens, the government will again be in a position of liquidating its excess storage capacity.

The most productive steps to answering that question are being adressed now through the implementation of the foreign exchange auction. As prices are adjusted to reflect real values, the profitability of manufacturing and processing can be more accurately assessed. It would seem, however, that an analysis of the situation would show that under the current exchange rate regime, and with Zambia's relatively skilled and low cost labor force, that small-scale, agro-industrial based manufacturing and processing activities would be highly profitable. Again, interest rate policy reform will play a pivotal role in facilitating the establishment of such firms. Special problems will be encountered as such firms move into the now lucrative export market. In order to support this growth, a program of export credits and guarantees, like those in the process of being developed for the regional PTA, should be designed and implemented as soon as possible. Also in this regard, administrative barriers to regional trade, customs clearances and documentation procedures for example, should be identified and streamlined. These are additional examples of the implementation requirements of the reforms undertaken to date.

IV. Measures to Improve Agricultural Sector Performance

Throughout the above discussion, recommendations were made regarding further reforms which could be undertaken to enhance the performance of the agricultural sector. This section restates those recommendations in an abbreviated form arranged by common issues.

1. Price Reform Issues

- Regionally and seasonally differentiated prices
- Market determined prices for all commodities
- Removal of remaining maize and fertilizer subsidies
- Elimination of remaining state marketing controls
- Decontrol of interest rates

2. Institutional Reform Issues

- Improved capacity for policy reform analysis and implementation
- Improved research and extension regarding emergent farmers
- Improved practical agricultural training
- Reform within the agricultural credit sector

3. Infrastructural Reform Issues

- Road improvements
- Reduction of post harvest losses through better storage

V. Agricultural Sector Strategy

The above discussion analyzes the agricultural sector and outlines the changes and progress made within the last few years. It makes a number of recommendations regarding future reforms which will be beneficial to the sector. Thus, in the agricultural sector for the next 18 to 24 months, USAID should continue to reinforce the existing reforms that have already been implemented (retail price decontrol, open marketing in all commodities except maize and fertilizer, negotiated producer prices, etc.) so these do not slip back; USAID should also support the implementation of reforms announced but not yet implemented. Specifically, this means working for further marketing liberalization and increased price and non-price incentives for producers (border pricing for all commodities, regional pricing for maize and fertilizer,

subsidy reduction or elimination where possible or shifting the point of payment for the subsidy--and free and open competition in all agricultural commodities, outputs and inputs). To do this, USAID should focus the policy dialogue on continued marketing liberalization. Also USAID/Zambia should continue to support and strengthen the GRZ's capacity and capability to undertake both policy analysis and policy implementation, with increasing emphasis on the implementation issue through the Zambia Agricultural Training, Planning and Institutional Development II Project (ZATPID II, 611-0207). The Human and Institutional Resources Development Project (HIRD, 611-0206) should be used to support implementation of the measures outside the agricultural sector, in finance, banking, the private sector and parastatals, where needed. Counterpart funds and PL 480 should also be used to carry out the policy dialogue and to assist in the implementation of the needed reforms. Program aid, such as the Zambia Multichannel Agricultural Marketing Program (ZAMCAM, 611-0747) and Zambia Auction Program Support Program, (ZAPS 611-0757), should be used, as long as the restructuring climate is positive, to improve the macroeconomic context for the agricultural sector reform policy.

STATISTICAL ANNEX

TABLE 1: AGRICULTURAL DATA: AREA, YIELD, PRODUCTION, MARKETINGS AND RETENTIONS

| MAIZE | | | | | |
|---------|------------------|-------------------------------|-------------------------------------|------------------------------------|------------------------------------|
| YEAR | AREA (000 ha) | YIELD (bags/ha) (90 kg) | PRODUCTION (000 bags) (90 kg) | MARKETING (000 bags) (90 kg) | RETENTION (000 bags) (90 kg) |
| 1974/75 | 212.2 | 31.3 | 6633.6 | 6216.5 | 417.1 |
| 1975/76 | 415.0 | 33.5 | 13916.0 | 8333.0 | 5583.0 |
| 1976/77 | 485.0 | 24.8 | 12040.0 | 7738.3 | 4301.7 |
| 1977/78 | 595.4 | 23.1 | 13774.0 | 6462.8 | 7311.2 |
| 1978/79 | 335.8 | 23.2 | 7781.0 | 3732.9 | 4048.1 |
| 1979/80 | 540.0 | 27.8 | 15000.0 | 4247.4 | 10752.6 |
| 1980/81 | 622.0 | 26.5 | 16501.0 | 7703.8 | 8797.2 |
| 1981/82 | 454.5 | 18.3 | 8336.0 | 5705.6 | 2630.4 |
| 1982/83 | 546.7 | 19.0 | 10392.0 | 5901.8 | 4490.2 |
| 1983/84 | 506.5 | 19.1 | 9686.0 | 6267.6 | 3418.4 |
| 1984/85 | 581.9 | 21.4 | 12470.8 | 7069.6 | 5401.2 |
| 1985/86 | 588.5 | 21.0 | 12350.7 | 8802.1 | 3548.5 |
| 1986/87 | 433.9 | 25.5 | 11051.2 | 6690.3 | 4360.9 |

Source:

- 1974/75 to 1980/81: Final Crop Forecast, various issues, Statistics Section, Planning Division Ministry of Agricultural and Water Development
- 1981/82 to 1983/84: Quarterly Agricultural Statistics Bulletin, October-December 1985, Statistics Section, Planning Division Ministry of Agricultural and Water Development
- 1985/86 to 1986/87: Final Crop Forecast; 1986 and 1987, CSO

TABLE 1. (continued)

SUNFLOWER

| YEAR | AREA (000 ha) | YIELD (bags/ha) (90 kg) | PRODUCTION (000 bags) (90 kg) | MARKETING (000 bags) (90 kg) | RETENTION (000 bags) (90 kg) |
|---------|------------------|-------------------------------|-------------------------------------|------------------------------------|------------------------------------|
| 1974/75 | 15.5 | 11.5 | 178.7 | 204.5 | -25.8 |
| 1975/76 | 19.3 | 10.7 | 205.9 | 319.3 | -113.4 |
| 1976/77 | 24.0 | 9.9 | 236.6 | 266.4 | -29.8 |
| 1977/78 | 23.9 | 9.7 | 231.0 | 151.0 | 80.0 |
| 1978/79 | 24.8 | 8.3 | 205.0 | 238.4 | -33.4 |
| 1979/80 | 56.8 | 7.4 | 420.0 | 344.8 | 75.2 |
| 1980/81 | 67.0 | 8.0 | 536.0 | 384.5 | 151.5 |
| 1981/82 | 41.5 | 12.9 | 534.6 | 426.1 | 108.5 |
| 1982/83 | 48.1 | 14.5 | 698.6 | 609.3 | 89.3 |
| 1983/84 | 57.7 | 14.9 | 860.2 | 808.5 | 51.7 |
| 1984/85 | 62.6 | 13.6 | 848.5 | 509.9 | 338.6 |
| 1985/86 | 57.2 | 8.7 | 500.0 | 475.0 | 25.0 |
| 1986/87 | 29.6 | 13.1 | 386.9 | 374.6 | 12.3 |

SOYBEANS

| YEAR | AREA (000 ha) | YIELD (bags/ha) (90 kg) | PRODUCTION (000 bags) (90 kg) | MARKETING (000 bags) (90 kg) | RETENTION (000 bags) (90 kg) |
|---------|------------------|-------------------------------|-------------------------------------|------------------------------------|------------------------------------|
| 1974/75 | 0.7 | 17.0 | 12.5 | 4.1 | 8.4 |
| 1975/76 | 0.8 | 7.0 | 5.8 | 6.7 | -0.9 |
| 1976/77 | 1.2 | 12.2 | 14.6 | 14.2 | 0.4 |
| 1977/78 | 2.0 | 16.3 | 32.5 | 13.2 | 19.3 |
| 1978/79 | 2.2 | 12.3 | 27.0 | 14.4 | 12.6 |
| 1979/80 | 1.5 | 14.0 | 21.0 | 39.2 | -18.2 |
| 1980/81 | 4.5 | 16.0 | 72.0 | 40.8 | 31.2 |
| 1981/82 | 5.3 | 15.3 | 81.2 | 43.1 | 38.1 |
| 1982/83 | 5.0 | 17.8 | 88.4 | 76.6 | 11.7 |
| 1983/84 | 9.4 | 15.5 | 146.2 | 106.2 | 40.0 |
| 1984/85 | 9.8 | 16.6 | 163.8 | 177.8 | -14.0 |
| 1985/86 | 10.0 | 14.0 | 140.0 | 130.0 | 10.0 |
| 1986/87 | 16.9 | 15.6 | 263.1 | 259.0 | 4.1 |

Note: Marketing may exceed production due to sales of retentions from the previous year's production.

TABLE 1. (continued)

| GROUNDNUTS | | | | | |
|------------|------------------|-------------------------------|-------------------------------------|------------------------------------|------------------------------------|
| YEAR | AREA (000 ha) | YIELD (bags/ha) (80 kg) | PRODUCTION (000 bags) (80 kg) | MARKETING (000 bags) (80 kg) | RETENTION (000 bags) (80 kg) |
| 1974/75 | 11.2 | 10.0 | 111.7 | 76.2 | 35.5 |
| 1975/76 | 17.6 | 8.6 | 151.9 | 118.4 | 33.5 |
| 1976/77 | 102.0 | 7.7 | 789.0 | 93.5 | 695.5 |
| 1977/78 | 137.3 | 6.7 | 916.7 | 28.5 | 888.2 |
| 1978/79 | 43.2 | 6.0 | 260.0 | 35.9 | 224.1 |
| 1979/80 | 134.0 | 11.2 | 1500.0 | 25.7 | 1474.3 |
| 1980/81 | 134.0 | 5.2 | 696.0 | 16.6 | 679.4 |
| 1981/82 | 22.4 | 5.2 | 117.2 | 9.6 | 107.6 |
| 1982/83 | 31.4 | 4.4 | 137.3 | 13.0 | 124.2 |
| 1983/84 | 29.5 | 5.6 | 165.9 | 14.5 | 151.5 |
| 1984/85 | 31.9 | 5.7 | 181.5 | 30.2 | 151.2 |
| 1985/86 | 34.4 | 6.6 | 227.3 | 50.0 | 177.3 |
| 1986/87 | 110.0 | 5.4 | 592.8 | 269.0 | 323.8 |

| PADDY RICE | | | | | |
|------------|------------------|-------------------------------|-------------------------------------|------------------------------------|------------------------------------|
| YEAR | AREA (000 ha) | YIELD (bags/ha) (90 kg) | PRODUCTION (000 bags) (90 kg) | MARKETING (000 bags) (90 kg) | RETENTION (000 bags) (90 kg) |
| 1974/75 | 1.6 | 12.1 | 19.4 | 12.6 | 6.7 |
| 1975/76 | 2.2 | 12.2 | 26.8 | 26.2 | 0.6 |
| 1976/77 | 2.8 | 13.8 | 38.7 | 23.3 | 15.4 |
| 1977/78 | 3.8 | 13.8 | 52.4 | 36.6 | 15.8 |
| 1978/79 | 3.1 | 12.5 | 38.9 | 23.2 | 15.7 |
| 1979/80 | 5.1 | 11.4 | 58.0 | 27.7 | 30.3 |
| 1980/81 | 6.0 | 11.7 | 70.0 | 33.4 | 36.6 |
| 1981/82 | 5.9 | 11.1 | 65.9 | 29.8 | 36.1 |
| 1982/83 | 7.0 | 17.2 | 120.4 | 63.3 | 57.1 |
| 1983/84 | 8.7 | 17.8 | 155.9 | 68.0 | 87.9 |
| 1984/85 | 10.7 | 13.1 | 140.4 | 78.6 | 61.9 |
| 1985/86 | 10.4 | 13.5 | 140.1 | 101.2 | 38.9 |
| 1986/87 | 13.5 | 16.1 | 216.9 | 143.1 | 73.8 |

TABLE 1. (continued)

WHEAT

| YEAR | AREA (000 ha) | YIELD (bags/ha) (90 kg) | PRODUCTION (000 bags) (90 kg) | MARKETING (000 bags) (90 kg) | RETENTION (000 bags) (90 kg) |
|---------|------------------|-------------------------------|-------------------------------------|------------------------------------|------------------------------------|
| 1974/75 | 0.4 | 23.8 | 10.3 | 10.4 | .0 |
| 1975/76 | 1.2 | 33.0 | 38.7 | 43.9 | -5.1 |
| 1976/77 | n.a. | n.a. | n.a. | 59.2 | n.a. |
| 1977/78 | 1.3 | 43.5 | 56.5 | 58.3 | -1.8 |
| 1978/79 | 0.9 | 40.4 | 36.4 | 72.5 | -36.1 |
| 1979/80 | 2.5 | 32.3 | 80.0 | 106.5 | -26.5 |
| 1980/81 | 4.0 | 32.5 | 130.0 | 127.5 | 2.5 |
| 1981/82 | 3.7 | 42.5 | 157.3 | 142.7 | 14.6 |
| 1982/83 | 4.5 | 49.8 | 225.3 | 113.5 | 111.8 |
| 1983/84 | 3.6 | 41.6 | 149.9 | 125.7 | 24.2 |
| 1984/85 | n.a. | n.a. | n.a. | n.a. | n.a. |
| 1985/86 | n.a. | n.a. | n.a. | n.a. | n.a. |
| 1986/87 | n.a. | n.a. | n.a. | n.a. | n.a. |

Note: See July-September 1985 Agriculture Statistics Bulletin for area and production data

SEEDCOTTON

| YEAR | AREA (000 ha) | YIELD (tons/ha) | PRODUCTION (000 m tons) | MARKETING (m tons) | RETENTION (m tons) |
|---------|------------------|--------------------|----------------------------|-----------------------|-----------------------|
| 1974/75 | 4.1 | 0.7 | 3.0 | 2.6 | 0.4 |
| 1975/76 | 6.0 | 0.8 | 4.5 | 3.9 | 0.6 |
| 1976/77 | 9.3 | 0.8 | 7.9 | 8.9 | -1.0 |
| 1977/78 | 16.7 | 0.7 | 11.9 | 8.4 | 3.5 |
| 1978/79 | 24.0 | 0.5 | 12.0 | 14.9 | -2.9 |
| 1979/80 | 30.0 | 0.7 | 20.0 | 22.9 | -2.9 |
| 1980/81 | 31.6 | 0.7 | 23.0 | 16.8 | 6.2 |
| 1981/82 | 23.9 | 0.5 | 12.8 | 12.8 | 0.0 |
| 1982/83 | 33.1 | 0.6 | 20.7 | 20.7 | 0.0 |
| 1983/84 | 52.0 | 0.8 | 43.9 | 43.9 | 0.0 |
| 1984/85 | 45.8 | 0.7 | 30.3 | 30.3 | 0.0 |
| 1985/86 | 52.0 | 0.6 | 32.3 | 32.3 | 0.0 |
| 1986/87 | n.a. | n.a. | n.a. | n.a. | n.a. |

TABLE 1. (continued)

| SORGHUM | | | | | |
|---------|------------------|-------------------------------|-------------------------------------|------------------------------------|------------------------------------|
| YEAR | AREA (000 ha) | YIELD (bags/ha) (90 kg) | PRODUCTION (000 bags) (90 kg) | MARKETING (000 bags) (90 kg) | RETENTION (000 bags) (90 kg) |
| 1974/75 | 3.4 | 15.7 | 52.9 | n.a. | n.a. |
| 1975/76 | 7.3 | 6.7 | 48.6 | n.a. | n.a. |
| 1976/77 | 5.3 | 10.5 | 55.4 | n.a. | n.a. |
| 1977/78 | 49.7 | 8.0 | 396.9 | n.a. | n.a. |
| 1978/79 | 44.5 | 8.8 | 392.0 | n.a. | n.a. |
| 1979/80 | 89.0 | 2.2 | 200.0 | n.a. | n.a. |
| 1980/81 | 60.0 | 8.0 | 481.0 | n.a. | n.a. |
| 1981/82 | 21.5 | 7.2 | 155.4 | 1.7 | 155.4 |
| 1982/83 | 16.6 | 8.4 | 139.1 | 1.0 | 138.1 |
| 1983/84 | 21.8 | 7.6 | 166.3 | 3.2 | 163.1 |
| 1984/85 | 24.8 | 9.1 | 224.7 | 12.5 | 212.3 |
| 1985/86 | 55.6 | 9.0 | 500.0 | 20.0 | 480.0 |
| 1986/87 | 66.9 | 7.8 | 520.8 | 94.5 | 426.3 |

VIRGINIA TOBACCO

| YEAR | AREA (ha) | YIELD (tons/ha) | PRODUCTION (m tons) | MARKETING (m tons) | RETENTION (m tons) |
|---------|--------------|--------------------|------------------------|-----------------------|-----------------------|
| 1969/70 | | | | 4.8 | |
| 1970/71 | | | | 5.9 | |
| 1971/72 | | | | 5.5 | |
| 1972/73 | | | | 6.2 | |
| 1973/74 | | | | 6.3 | |
| 1974/75 | | | | 6.5 | |
| 1975/76 | | | | 6.3 | |
| 1976/77 | | | | 5.6 | |
| 1977/78 | | | | 3.7 | |
| 1978/79 | | | | 4.6 | |
| 1979/80 | | | | 4.1 | |
| 1980/81 | | | | 2.3 | |
| 1981/82 | 2160.0 | 1.0 | 2.1 | 2.1 | .0 |
| 1982/83 | 2180.0 | 1.0 | 2.3 | 2.3 | .0 |
| 1983/84 | 2080.0 | 1.2 | 2.5 | 2.5 | .0 |
| 1984/85 | 1460.0 | 1.5 | 2.1 | 2.1 | .0 |
| 1985/86 | 2840.0 | 1.5 | 4.2 | 3.4 | 0.9 |

Note: Only limited data is available before 1981/82, hence the largely blank table.

TABLE 1. (continued)

| YEAR | MILLET | | | | |
|---------|------------------|--------------------|--------------------------------------|-------------------------------------|-------------------------------------|
| | AREA (000 ha) | YIELD (bags/ha) | PRODUCTION (000 bags) (90 kgs) | MARKETING (000 bags) (90 kgs) | RETENTION (000 bags) (90 kgs) |
| 1969/70 | | | | * | |
| 1970/71 | | | | 0.3 | |
| 1971/72 | | | | 0.1 | |
| 1972/73 | | | | .0 | |
| 1973/74 | | | | .0 | |
| 1974/75 | | | | nil | |
| 1975/76 | | | | nil | |
| 1976/77 | | | | .0 | |
| 1977/78 | | | | .0 | |
| 1978/79 | | | | nil | |
| 1979/80 | | | | .0 | |
| 1980/81 | | | | 2.6 | |
| 1981/82 | | | | 2.4 | |
| 1981/82 | n.a. | n.a. | n.a. | n.a. | n.a. |
| 1982/83 | 20.0 | 7.1 | 141.1 | 1.1 | 140.0 |
| 1983/84 | 19.0 | 7.9 | 150.0 | 0.2 | 149.9 |
| 1984/85 | 22.4 | 9.7 | 216.0 | 0.5 | 215.5 |
| 1985/86 | 18.5 | 7.0 | 129.6 | 1.0 | 128.6 |
| 1986/87 | n.a. | n.a. | n.a. | n.a. | n.a. |

Note: Only limited data is available before 1981/82, hence the largely blank table.

* .0 entries indicate very small amounts (less than 50 bags)
nil indicates no trade

TABLE 2: PRODUCER PRICES OF SELECTED COMMODITIES

| YEAR | COMMODITIES | | | | | | | | | |
|---------|----------------|-----------------|-------------------|-------------------|----------------|---------------|--------------|-----------------|------------------|-----------------|
| | Maize 90 kg | G-nuts 80 kg | S'flower 50 kg | Soybeans 90 kg | Wheat 90 kg | Rice 90 kg | Cotton kg | Tobaccc kg * | Sorghum 90 kg | Millet 90 kg |
| 1969/70 | 3.50 | 10.20 | 2.45 | 3.20 | n/a | n/a | 0.18 | 0.62 | 4.70 | n/a |
| 1970/71 | 4.00 | 10.20 | 8.40 | 8.40 | n/a | n/a | 0.18 | 0.65 | 4.70 | n/a |
| 1971/72 | 4.30 | 10.20 | 6.00 | 8.40 | n/a | n/a | 0.18 | 0.75 | 4.70 | n/a |
| 1972/73 | 4.30 | 12.60 | 6.64 | 8.40 | n/a | n/a | 0.18 | 0.86 | 4.70 | n/a |
| 1973/74 | 4.30 | 17.00 | 8.95 | 13.20 | n/a | 12.00 | 0.25 | 0.95 | 5.00 | n/a |
| 1974/75 | 5.00 | 17.00 | 8.40 | 13.20 | 16.00 | 12.00 | 0.30 | 0.81 | 6.00 | n/a |
| 1975/76 | 6.30 | 25.00 | 10.00 | 17.00 | 16.00 | 14.40 | 0.40 | 1.00 | 6.00 | n/a |
| 1976/77 | 6.30 | 25.00 | 10.00 | 17.00 | 16.00 | 14.40 | 0.40 | 0.98 | 6.00 | n/a |
| 1977/78 | 6.80 | 28.60 | 12.50 | 21.50 | 20.00 | 14.40 | 0.46 | 1.29 | 6.00 | n/a |
| 1978/79 | 9.00 | 32.00 | 13.70 | 25.00 | 20.00 | 16.00 | 0.46 | 1.51 | 6.00 | 6.00 |
| 1979/80 | 11.70 | 35.00 | 16.40 | 32.00 | 20.00 | 18.00 | 0.46 | 1.57 | 6.00 | 6.00 |
| 1980/81 | 13.50 | 42.70 | 17.60 | 36.30 | 26.00 | 18.00 | 0.46 | 1.65 | 9.00 | 6.00 |
| 1981/82 | 16.00 | 48.00 | 20.75 | 42.21 | 32.00 | 28.00 | 0.47 | 2.40 | 9.00 | 6.00 |
| 1982/83 | 18.30 | 55.00 | 21.50 | 45.30 | 35.75 | 40.00 | 0.52 | 2.65 | 16.00 | 29.00 |
| 1983/84 | 24.50 | 71.50 | 21.50 | 52.50 | 42.50 | 40.00 | 0.58 | 2.82 | 18.65 | 29.50 |
| 1984/85 | 28.32 | 91.67 | 27.88 | 60.90 | 48.20 | 40.00 | 0.67 | 3.45 | 26.90 | 38.07 |
| 1985/86 | 55.00 | 131.35 | 41.95 | 112.10 | 86.40 | 45.00 | 0.99 | 5.12 | 42.75 | 56.25 |
| 1986/87 | 78.00 | 162.00 | 70.00 | 148.00 | 111.00 | 83.00 | n/a | 6.25 | n/a | 92.00 |

* Sales to 1976 were auction floor sales. The Tobacco Board purchased for resale beginning in 1977

Prices pertain to the marketing year which begins on May 1 and ends April 30 of following year.

The column labeled "Year" pertains to a production year which begins October 1 and ends April 30 of the following year.

Therefore, the first year (1972) is when the production activity began and the last year (1973) is the year in which the output was sold.

Source: Annual Agricultural Statistical Bulletin, 1983
Statistic Section, Planning Division, December 1984
Ministry of Agriculture and Water Development

TABLE 3: PERCENTAGE CHANGE IN PRICES FROM PREVIOUS YEAR

| YEAR | COMMODITIES | | | | | | | | | |
|---------|----------------|-----------------|-------------------|-------------------|----------------|---------------|--------------|---------------|------------------|-----------------|
| | Maize 90 kg | G-nuts 80 kg | S'flower 50 kg | Soybeans 90 kg | Wheat 90 kg | Rice 90 kg | Cotton kg | Tobacco kg | Sorghum 90 kg | Millet 90 kg |
| 1960/70 | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| 1970/71 | 14.29 | 0.00 | 242.86 | 162.50 | n/a | n/a | 0.00 | 11.29 | 0.00 | n/a |
| 1971/72 | 7.50 | 0.00 | -28.57 | 0.00 | n/a | n/a | 0.00 | 8.70 | 0.00 | n/a |
| 1972/73 | 0.00 | 23.53 | 10.67 | 0.00 | n/a | n/a | 0.00 | 14.67 | 0.00 | n/a |
| 1973/74 | 0.00 | 34.92 | 34.79 | 57.14 | n/a | n/a | 38.89 | 15.12 | 6.38 | n/a |
| 1974/75 | 16.28 | 0.00 | -6.15 | 0.00 | n/a | n/a | 20.00 | -18.18 | 20.00 | n/a |
| 1975/76 | 26.00 | 47.06 | 19.05 | 28.79 | 0.00 | 20.00 | 33.33 | 23.46 | 0.00 | n/a |
| 1976/77 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -2.00 | 0.00 | n/a |
| 1977/78 | 7.94 | 14.40 | 25.00 | 26.47 | 25.00 | 0.00 | 15.00 | 31.63 | 0.00 | n/a |
| 1978/79 | 32.35 | 11.89 | 9.60 | 16.28 | 0.00 | 11.11 | 0.00 | 17.05 | 0.00 | n/a |
| 1979/80 | 30.00 | 9.38 | 19.71 | 28.00 | 0.00 | 12.50 | 0.00 | 3.97 | 0.00 | n/a |
| 1980/81 | 15.38 | 22.00 | 7.32 | 13.44 | 30.00 | 0.00 | 0.00 | 5.10 | 50.00 | n/a |
| 1981/82 | 18.52 | 12.41 | 17.90 | 16.28 | 23.08 | 55.56 | 2.17 | 45.45 | 0.00 | n/a |
| 1982/83 | 14.38 | 14.58 | 3.61 | 7.32 | 11.72 | 42.86 | 10.64 | 10.42 | 77.78 | 383.33 |
| 1983/84 | 33.88 | 30.00 | 0.00 | 15.89 | 18.88 | 0.00 | 11.54 | 6.42 | 16.56 | 1.72 |
| 1984/85 | 15.59 | 28.21 | 29.67 | 16.00 | 13.41 | 0.00 | 15.52 | 22.34 | 44.24 | 29.05 |
| 1985/86 | 94.21 | 43.29 | 50.47 | 84.07 | 79.25 | 12.50 | 47.76 | 48.41 | 58.92 | 47.75 |
| 1986/87 | 41.82 | 23.33 | 66.87 | 32.02 | 28.47 | 84.44 | n/a | 22.07 | n/a | 63.56 |

TABLE 4: PRICES IN KWACHA PER METRIC TON

| YEAR | COMMODITIES | | | | | | | | | |
|---------|----------------|-----------------|--------------------|-------------------|----------------|---------------|--------------|---------------|------------------|-----------------|
| | Maize 90 kg | G-nuts 80 kg | Sunflower 50 kg | Soybeans 90 kg | Wheat 90 kg | Rice 90 kg | Cotton kg | Tobacco kg | Sorghum 90 kg | Millet 90 kg |
| 1969/70 | 38.89 | 127.50 | 49.00 | 35.56 | n/a | n/a | 180.00 | 620.00 | n/a | n/a |
| 1970/71 | 44.44 | 127.50 | 168.00 | 93.33 | n/a | n/a | 180.00 | 690.00 | n/a | n/a |
| 1971/72 | 47.78 | 127.50 | 120.00 | 93.33 | n/a | n/a | 180.00 | 750.00 | n/a | n/a |
| 1972/73 | 47.78 | 157.50 | 132.80 | 93.33 | n/a | n/a | 180.00 | 860.00 | n/a | n/a |
| 1973/74 | 47.78 | 212.50 | 179.00 | 146.67 | n/a | 133.33 | 250.00 | 990.00 | n/a | n/a |
| 1974/75 | 55.56 | 212.50 | 168.00 | 146.67 | 177.78 | 133.33 | 300.00 | 810.00 | n/a | n/a |
| 1975/76 | 70.00 | 312.50 | 200.00 | 188.89 | 177.78 | 160.00 | 400.00 | 1000.00 | n/a | n/a |
| 1976/77 | 70.00 | 312.50 | 200.00 | 188.89 | 177.78 | 160.00 | 400.00 | 980.00 | n/a | n/a |
| 1977/78 | 75.56 | 357.50 | 250.00 | 238.89 | 222.22 | 160.00 | 460.00 | 1290.00 | n/a | n/a |
| 1978/79 | 100.00 | 400.00 | 274.00 | 277.78 | 222.22 | 177.78 | 460.00 | 1510.00 | n/a | n/a |
| 1979/80 | 130.00 | 437.50 | 328.00 | 355.56 | 222.22 | 200.00 | 460.00 | 1570.00 | n/a | n/a |
| 1980/81 | 150.00 | 533.75 | 352.00 | 403.33 | 288.89 | 200.00 | 460.00 | 1650.00 | n/a | n/a |
| 1981/82 | 177.78 | 600.00 | 415.00 | 469.00 | 355.56 | 311.11 | 470.00 | 2400.00 | 100.00 | 66.67 |
| 1982/83 | 203.33 | 687.50 | 430.00 | 503.33 | 397.22 | 444.44 | 520.00 | 2650.00 | 177.78 | 322.22 |
| 1983/84 | 272.22 | 893.75 | 430.00 | 583.33 | 472.22 | 444.44 | 580.00 | 2820.00 | 207.22 | 327.78 |
| 1984/85 | 314.67 | 1145.88 | 557.60 | 676.67 | 535.56 | 444.44 | 670.00 | 3450.00 | 298.89 | 423.00 |
| 1985/86 | 611.11 | 1641.88 | 839.00 | 1245.56 | 960.00 | 500.00 | 990.00 | 5120.00 | 475.00 | 625.00 |
| 1986/87 | 866.67 | 1800.00 | 777.78 | 1644.44 | 1233.33 | 922.22 | n/a | 69.44 | n/a | 1022.22 |

TABLE 5: PRICES DEFLATED BY THE GRZ CPI (LOW INCOME GROUP 1975=100)

| YEAR | COMMODITIES | | | | | | | | | | |
|---------|-------------|----------------|-----------------|-------------------|-------------------|----------------|---------------|--------------|---------------|------------------|-----------------|
| | deflator | Maize 90 kg | G-nuts 80 kg | S'flower 50 kg | Soybeans 90 kg | Wheat 90 kg | Rice 90 kg | Cotton kg | Tobacco kg | Sorghum 90 kg | Millet 90 kg |
| 1969/70 | 0.72 | 4.89 | 14.25 | 3.42 | 4.47 | n/a | n/a | 0.25 | 0.87 | 6.56 | n/a |
| 1970/71 | 0.75 | 5.33 | 13.58 | 11.19 | 11.19 | n/a | n/a | 0.24 | 0.92 | 6.26 | n/a |
| 1971/72 | 0.79 | 5.45 | 12.93 | 7.60 | 10.65 | n/a | n/a | 0.23 | 0.95 | 5.96 | n/a |
| 1972/73 | 0.84 | 5.12 | 15.00 | 7.90 | 10.00 | n/a | n/a | 0.21 | 1.02 | 5.60 | n/a |
| 1973/74 | 0.91 | 4.74 | 18.72 | 9.86 | 14.54 | n/a | 13.22 | 0.28 | 1.09 | 5.51 | n/a |
| 1974/75 | 1.00 | 5.00 | 17.00 | 8.40 | 13.20 | 16.00 | 12.00 | 0.30 | 0.81 | 6.00 | n/a |
| 1975/76 | 1.19 | 5.30 | 21.04 | 8.42 | 14.31 | 13.47 | 12.12 | 0.34 | 0.84 | 5.05 | n/a |
| 1976/77 | 1.42 | 4.43 | 17.57 | 7.03 | 11.95 | 11.24 | 10.12 | 0.28 | 0.69 | 4.22 | n/a |
| 1977/78 | 1.66 | 4.11 | 17.27 | 7.55 | 12.98 | 12.08 | 8.70 | 0.28 | 0.78 | 3.62 | n/a |
| 1978/79 | 1.82 | 4.96 | 17.62 | 7.54 | 13.77 | 11.01 | 8.81 | 0.25 | 0.83 | 3.30 | 3.30 |
| 1979/80 | 2.03 | 5.77 | 17.25 | 8.08 | 15.77 | 9.86 | 8.87 | 0.23 | 0.77 | 2.96 | 2.96 |
| 1980/81 | 2.31 | 5.84 | 18.46 | 7.61 | 15.69 | 11.24 | 7.78 | 0.20 | 0.71 | 3.89 | 2.59 |
| 1981/82 | 2.60 | 6.15 | 18.45 | 7.97 | 16.22 | 12.30 | 10.76 | 0.18 | 0.92 | 3.46 | 2.31 |
| 1982/83 | 3.11 | 5.88 | 17.67 | 6.91 | 14.56 | 11.49 | 12.85 | 0.17 | 0.85 | 5.14 | 9.32 |
| 1983/84 | 3.74 | 6.56 | 19.14 | 5.76 | 14.06 | 11.38 | 10.71 | 0.16 | 0.76 | 4.99 | 7.90 |
| 1984/85 | 5.13 | 5.52 | 17.86 | 5.43 | 11.86 | 9.39 | 7.79 | 0.13 | 0.67 | 5.24 | 7.42 |
| 1985/86 | 7.42 | 7.41 | 17.70 | 5.65 | 15.11 | 11.64 | 6.06 | 0.13 | 0.69 | 5.76 | 7.58 |

* First four months

The last year in the designation, 1973/1974, gives the year in which the CPI applies.

This corresponds to the marketing year in which the commodity was marketed.

Source: CPI 1970 - 1984: Monthly Digest of Statistics, various issues; Central Statistical Office
CPI 1985 - 1986: Consumer Price Statistics, June 1986; Central Statistical Office

TABLE 6. PRICES IN U.S. DOLLARS PER METRIC TON

| YEAR | COMMODITIES | | | | | | | | | | |
|---------|-------------|--------|--------|-----------|----------|--------|--------|--------|---------|---------|--------|
| | ex. rate* | Maize | G-nuts | Sunflower | Soybeans | Wheat | Rice | Cotton | Tobacco | Sorghum | Millet |
| 1974/75 | 1.40 | 77.78 | 297.50 | 235.20 | 205.33 | 248.89 | 186.67 | 420.00 | 1134.00 | 0.00 | 0.00 |
| 1975/76 | 1.55 | 108.50 | 484.38 | 310.00 | 292.78 | 275.56 | 248.00 | 620.00 | 1550.00 | 0.00 | 0.00 |
| 1976/77 | 1.40 | 98.00 | 437.50 | 280.00 | 264.44 | 248.89 | 224.00 | 560.00 | 1372.00 | 0.00 | 0.00 |
| 1977/78 | 1.27 | 95.96 | 454.03 | 317.50 | 303.39 | 282.22 | 203.20 | 584.20 | 1638.30 | 0.00 | 0.00 |
| 1978/79 | 1.23 | 123.00 | 492.00 | 337.02 | 341.67 | 273.33 | 218.67 | 565.80 | 1957.30 | 0.00 | 0.00 |
| 1979/80 | 1.26 | 163.80 | 551.25 | 413.28 | 448.00 | 280.00 | 252.00 | 579.60 | 1978.20 | 0.00 | 0.00 |
| 1980/81 | 1.27 | 190.50 | 677.86 | 447.04 | 512.23 | 366.89 | 254.00 | 584.20 | 2095.50 | 0.00 | 0.00 |
| 1981/82 | 1.14 | 202.67 | 684.00 | 473.10 | 534.66 | 405.33 | 354.67 | 535.80 | 2736.00 | 114.00 | 76.00 |
| 1982/83 | 1.07 | 217.57 | 735.63 | 460.10 | 538.57 | 425.03 | 475.56 | 556.40 | 2935.50 | 190.22 | 344.78 |
| 1983/84 | 0.78 | 212.33 | 697.13 | 335.40 | 455.00 | 368.33 | 346.67 | 452.40 | 2199.60 | 161.63 | 255.67 |
| 1984/85 | 0.50 | 157.33 | 572.94 | 278.80 | 338.33 | 267.78 | 222.22 | 335.00 | 1725.00 | 149.44 | 211.50 |
| 1985/86 | 0.15 | 91.67 | 246.28 | 125.85 | 186.83 | 144.00 | 75.00 | 148.50 | 768.00 | 71.25 | 93.75 |
| 1986/78 | 0.07 | 57.78 | 120.00 | 51.85 | 109.63 | 82.22 | 61.48 | n/a | 4.63 | n/a | 68.15 |

* exchange rate stated in US \$ per Kwacha

Exchange rates are approximately the mean of the year except for 1985/86 which is the approximate mean of the marketing year.

TABLE 7. RATIO OF OTHER COMMODITY PRICES TO MAIZE PRICES (price x/price maize)

| YEAR | COMMODITIES | | | | | | | | | |
|---------|-------------------|---------------------|---------------------|------------------|-----------------|-------------------|--------------------|--------------------|-------------------|--------------------|
| | G'nuts (80 kg) | S'flower (50 kg) | Soybeans (90 kg) | Wheat (90 kg) | Rice (90 kg) | Cotton (90 kg) | Tobacco (90 kg) | Sorghum (90 kg) | Millet (90 kg) | Cassava (90 kg) |
| 1969/70 | 2.91 | 0.70 | 0.91 | n/a | n/a | 4.63 | 15.94 | 1.34 | n/a | n/a |
| 1970/71 | 2.55 | 2.10 | 2.10 | n/a | n/a | 4.05 | 15.53 | 1.18 | n/a | n/a |
| 1971/72 | 2.37 | 1.40 | 1.95 | n/a | n/a | 3.77 | 15.70 | 1.09 | n/a | n/a |
| 1972/73 | 2.93 | 1.54 | 1.95 | n/a | n/a | 3.77 | 18.00 | 1.09 | n/a | n/a |
| 1973/74 | 3.95 | 2.08 | 3.07 | n/a | 2.79 | 5.23 | 20.72 | 1.16 | n/a | n/a |
| 1974/75 | 3.40 | 1.68 | 2.64 | 3.20 | 2.40 | 5.40 | 14.58 | 1.20 | n/a | n/a |
| 1975/76 | 3.97 | 1.59 | 2.70 | 2.54 | 2.29 | 5.71 | 14.29 | 0.95 | n/a | n/a |
| 1976/77 | 3.97 | 1.59 | 2.70 | 2.54 | 2.29 | 5.71 | 14.00 | 0.95 | n/a | n/a |
| 1977/78 | 4.21 | 1.84 | 3.16 | 2.94 | 2.12 | 6.09 | 17.07 | 0.88 | n/a | n/a |
| 1978/79 | 3.56 | 1.52 | 2.78 | 2.22 | 1.78 | 4.60 | 15.10 | 0.67 | 0.67 | n/a |
| 1979/80 | 2.99 | 1.40 | 2.74 | 1.71 | 1.54 | 3.54 | 12.08 | 0.51 | 0.51 | n/a |
| 1980/81 | 3.16 | 1.30 | 2.69 | 1.93 | 1.33 | 3.07 | 11.00 | 0.67 | 0.44 | n/a |
| 1981/82 | 3.00 | 1.30 | 2.64 | 2.00 | 1.75 | 2.64 | 13.50 | 0.56 | 0.38 | n/a |
| 1982/83 | 3.01 | 1.17 | 2.48 | 1.95 | 2.19 | 2.56 | 13.03 | 0.87 | 1.58 | 0.74 |
| 1983/84 | 2.92 | 0.88 | 2.14 | 1.73 | 1.63 | 2.13 | 10.36 | 0.76 | 1.20 | 0.73 |
| 1984/85 | 3.24 | 0.98 | 2.15 | 1.70 | 1.41 | 2.13 | 10.96 | 0.95 | 1.34 | 0.95 |
| 1985/86 | 2.39 | 0.76 | 2.04 | 1.57 | 0.82 | 1.62 | 8.38 | 0.78 | 1.02 | 0.98 |
| 1986/87 | 2.08 | 0.90 | 1.90 | 1.42 | 1.06 | n/a | 0.08 | n/a | 1.18 | n/a |

NOTE: Prices in Table 1 given on a per kg basis have been converted to 90 kg.

TABLE 8. ESTIMATION OF THE NUMBER OF FARM UNITS PER PROVINCE.

| Province | Large-Scale Commercial 40 HA | Medium-Scale Commercial 10-40 HA | Emergent Commercial 1-10 HA | Traditional Households |
|------------|------------------------------------|--|-----------------------------------|---------------------------|
| Southern | 330 | 9000 | 51000 | 6000 |
| Central | 300 | 7500 | 21000 | 18000 |
| Lusaka | 90 | 2000 | 4500 | 14000 |
| Copperbelt | - | 500 | 2000 | 18000 |
| Eastern | 20 | 6000 | 23000 | 8000 |
| Western | - | 10 | 5400 | 85000 |
| N. Western | - | 70 | 2900 | 53000 |
| Luapula | - | 60 | 2000 | 73000 |
| Northern | - | 90 | 7400 | 112000 |
| Total | 740 | 25220 | 119200 | 459000 |

Distribution of Farming Units By Zone

| ZONE | NUMBER OF FARMS | | | |
|-------|---------------------------------------|-------|--------|--------|
| I | 740 | 24500 | 99500 | 46000 |
| II | 0 | 720 | 14300 | 256000 |
| III | 0 | 10 | 5400 | 85000 |
| IV | Not discernable on a Provincial basis | | | |
| Total | 740 | 25230 | 119200 | 387000 |

Proportional Distribution of Farming Units by Zone, in percentages

| ZONE | NUMBER OF FARMS | | | |
|------|-----------------|--------|----------|-------------|
| | Large | Medium | Emergent | Traditional |
| I | 100 | 97 | 83 | 12 |
| II | 0 | 3 | 12 | 66 |
| III | 0 | 0 | 5 | 22 |
| IV | - | - | - | - |

Source: Commercial Farmers Bureau, October, 1986.

ANNEX 3

USAID/ZAMBIA FOOD ASSISTANCE STRATEGY

NOTE: This Annex will be submitted at a later date.

ANNEX 4

CAN ZAMBIA GROW OUT OF ITS DEBT PROBLEM?

INTRODUCTORY NOTE AND UPDATE

The paper which follows this note was prepared in September and October, 1986 and was based on projections prepared in February, 1986. Since that time, revised data have been released; however, sufficient time to revise the paper has not been available. The purpose of this brief introductory note is to point out the major implications of the revised data for the results and conclusions detailed in the paper, as well as to provide additional indicators of the magnitude and seriousness of Zambia's external debt problem.

The principal data revision which modifies the paper's results is the extreme downward revision in merchandise and services export receipts in 1986 from a projected SDR 897.0 million to an estimated SDR 707.0 million, a decrease of 21%. Since the paper's projections of future debt service ratios, debt service capacity, and resource requirements all depend on the projected 1986 export earnings, all the paper's results would be modified by this major decline in export receipts. Even though this fact implies that the specific numbers presented in the paper are now "incorrect," the decline in export earnings strengthens the basic argument and conclusions of the paper, i.e., Zambia's prospects for growing out of its debt problem are even worse than discussed in the paper. For example, all future debt service ratios should be multiplied by 1.27 to reflect the changes in exports.

In addition to the case argued in the paper that the financial burden imposed by Zambia's external debt is unsustainable, other indicators of the size of Zambia's debt bolster the conclusion. This becomes all the more evident when these indicators are compared to other countries that are recognized as having serious debt problems.

- In per capita terms, Zambia's debt is very high at \$840 per person compared with \$785 for Brazil (the acknowledged worst case of the debtor world), \$195 for Zaire, and \$365 for Sudan.
- Zambia's debt equals 380% of 1986 GDP while Brazil's debt is only 50% of GDP, and Zaire's and Sudan's debt are 140% and 80% of GDP, respectively.
- At least 45% of debt service, excluding arrears, is to preferred creditors (i.e., multilateral agencies) and thus is not eligible for rescheduling under current rescheduling practices.

ANNEX 4

CAN ZAMBIA GROW OUT OF ITS DEBT PROBLEM?

Richard P. Harber, Jr.
Program Economist
USAID/ZAMBIA

October 27, 1986

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I. INTRODUCTION AND PRINCIPAL CONCLUSIONS

The economic problems facing Zambia are legion -- low growth and employment, large balance of payments deficits, the highest rate of urbanization in Africa, the effects of prospective counter-sanctions, etc.; however, one of the most severe of these problems is Zambia's external debt. Despite the major economic policy reforms that have been adopted by the Government of the Republic of Zambia (GRZ), significant donor support for the GRZ's efforts at restructuring the economy, past and prospective rescheduling of Zambia's debt service, and improving performance of the economy, the problem of servicing the country's external debt remains daunting.

This paper examines the various dimensions of this debt problem. The central focus of the paper is to answer the question posed in the title, namely Can Zambia Grow Out of Its Debt Problem? The paper examines the effects of various rescheduling options on the ability of the GRZ to service its debt. The analysis concentrates on three aspects of the problem:

- 1) The financial problem of the balance of payments and foreign exchange availability;
- 2) The financial problem of the government budget; and
- 3) The availability of resources for achieving an acceptable rate of economic growth.

The concepts and methodology used in the paper are presented in Section II. Section III presents an overview of the policy reform program undertaken by the GRZ and the financial problems currently confronting Zambia. Sections IV and V examine the effects of debt rescheduling on the questions listed above. Finally, the conclusions to be drawn from the analysis are presented in Section VI.

The principal conclusions of this paper are:

- Over the period 1983-1986 Zambia has suffered from extreme financial imbalances on both external and internal accounts. Ex ante overall deficits on the external account have steadily increased from SDR 294 million in 1983 to an estimated SDR 505 million in 1986, while the ex ante central government budget deficit has increased from Kwacha 373 million in 1983 to an estimated Kwacha 3,412 million in 1986.

- The principal reason for the increase in these ex ante deficits has been the continual increase in debt service obligations from SDR 577 million in 1983 to SDR 824 million in 1986. As a percent of exports of goods and services, debt service obligations rose from 56% in 1983 to over 95% in 1986. As a share of the ex ante budget deficit, debt service has risen from 66.2% in 1983 to an estimated 93% in 1986.
- Fully accurate figures for Zambia's debt outstanding at the end of 1985 are not available; however, estimates are that this debt was approximately SDR 5.6 billion including some SDR 633 million of arrears. Excluding arrears, Zambia's debt was structured as follows: 37.6% to multilateral organizations, 10.3% to financial institutions, 6.6% to suppliers, and 45.5% to bilateral sources.
- Scheduled service payments can be expected to average SDR 978 million annually from 1987 to 1993, and SDR 927.5 million annually from 1994 to 2000.
- Despite the assumed eight percent (8%) growth of export revenues and budgetary resources, the annual average ratio of scheduled debt service to exports is 81% for the period 1987-1993 and 45% for 1994-2000, while the kwacha equivalent of the scheduled debt service averages almost 113% of projected revenues and grants for the period 1987-2000 and 62.4% for 1994-2000.
- If Zambia were only to make debt service payments equal to 25% of export revenues throughout this period, the arrears accumulated by the year 2000 would be more than SDR 7.6 billion. If payments are limited to the equivalent of 25% of government revenue and grants, then new arrears would total over SDR 9.2 billion at the end of the year 2000.
- The additional resources needed to achieve a modest 2% per capita income growth rate with the scheduled debt service average SDR 588.5 million annually in the period 1987-1993. This figure represents the annual increase in net inflows from abroad (exports, aid, borrowing, etc.) over and above the assumed growth of exports and transfers, as well as the projected level of new borrowing.
- For the 1987-1993 period, neither of the standard rescheduling scenarios considered provides sufficient debt relief to result in a sustainable level of service payments on either foreign exchange or budgetary resource availability. In addition, neither standard scenario provides sufficient relief to allow a two percent (2%) per capita growth.
 - o When service payments on newly accumulated arrears are excluded, the more concessional of the two standard scenarios (Standard 2) still results in a debt service to exports ratio of almost 51% and a budgetary debt service ratio of 71%.

- o When the service payments on likely new arrears are included, the above ratios rise to over 64% and 89%, respectively.
- o Estimated additional resource inflows of SDR 164 million per annum would be necessary to provide sufficient resources to achieve the target of a two percent annual growth of per capita income.
- On the basis of foreign exchange sustainability only the substantial rescheduling of multilateral debt service, commercial interest payments, halving the interest rate on rescheduled service, and forgiving 10-20% of scheduled debt service provide a reasonable chance of sustainable service payments and do not lead to substantial accumulation of arrears when service payments on new arrears are excluded from the analysis. When service payments on likely new arrears are included the effective rescheduling scenarios are reduced to the most concessional combinations of rescheduling scenarios considered.
- On the basis of budgetary sustainability, none of the scenarios provide a truly sustainable situation, even when service payments on likely new arrears are excluded. In the "best" case the annual average budgetary debt service ratio is 26% when service payments on likely new arrears are excluded, and 30% when these payments are included.
- To provide the resources necessary to achieve the targeted two percent annual growth of per capita income, the minimum requirement is that at least 75% of service payments be rescheduled in addition to the "normal" rescheduling terms.
- For the seven years following the reschedulings, i.e., 1994-2000, none of the rescheduling scenarios considered result in a sustainable payments situation for this period. This conclusion is true whether the additional payments on likely new arrears are included or excluded. The inclusion of these additional payments, of course, greatly aggravate the debt servicing problem by adding anywhere from SDR 1.0 billion to SDR 1.5 billion to the service requirements when compared to the payments due when these additional payments are excluded.
- Due to the non-sustainability of the debt payments and based on the foreign exchange constraint, likely new arrears in the year 2000 could range from SDR 6.5 billion to SDR 10.5 billion if the service on these arrears are excluded from the analysis, or from SDR 10.7 billion to SDR 14.4 billion if the service on these arrears are included.
- If the likely new arrears are accumulated on the basis of the budgetary constraint, then the above ranges for accumulated arrears by the year 2000 are SDR 8.1 billion to SDR 12.1 billion when service on these arrears are excluded, or SDR 12.4 billion to SDR 16.1 billion when the service payments on these arrears are included.

-- The fundamental conclusion pointed to by the analysis of Zambia's external debt situation is that it is extremely optimistic, if not unrealistic, to believe that Zambia will be able to grow out of its debt problem anytime in this century. The best that can be expected is that Zambia in conjunction with the international community can manage to "muddle through" this massive problem by continual rescheduling of debt service. Even with this approach, however, we will only be postponing the need to eventually deal with this problem in a truly effective manner.

II. CONCEPTS AND METHODOLOGY

A. Concepts: The standard concern when examining a country's external debt is the financial question of the effect of debt service on the balance of payments or external balance. While this question is considered in this paper, two additional effects of debt service are also considered--one financial, the other not.

The additional financial question concerns the implications of debt service on the government budget or fiscal balance. While the actual debt service must be paid with foreign exchange, this foreign exchange must be purchased with local currency. Since such purchases are included in the central budget, they compete with the other demands on limited government revenues. Even though the local funds for purchasing foreign exchange could be "generated" by expanding the money supply, this approach runs counter to efforts to stabilize and restructure the economy.

The non-financial question considered is the effect of debt service on the availability of resources, principally foreign exchange, to generate growth. Growth is necessary to maintain the impetus of the stabilization and restructuring effort, as well as, political stability.

B. Methodology: The approach used to analyze the various effects of Zambia's debt problem is based upon an accounting model which incorporates the balance of payments, including debt service, rescheduling options, government revenue forecasts, and variables affecting resource needs for growth. Base data are taken primarily from IMF documents for the period 1985-86. IMF projections are used for the period 1987-89. Projections for later years are based on optimistic USAID assumptions. (See Section II.C for a discussion of the general assumptions used in these projections. The specific approaches used to examine the three questions identified in Section II.A are described below.

The financial analysis examines the feasibility or sustainability of the projected debt service obligations given the projected resource availability. To simplify the presentation, the period 1987-2000 is divided into two seven year periods and annual averages for summary measures are presented.

1. Effects on the External Balance: In addition to considering the projected ex ante overall balance of the external accounts, the analysis uses the debt service to exports ratio as the basic measure of the sustainability of projected debt service obligations. Specifically, the projected debt service ratio is compared to a target ratio which is viewed as acceptable. If the actual debt service ratio exceeds the target ratio, then the projected situation is considered unsustainable. This means that the excess of the projected service payments over the acceptable level are likely to accumulate as arrears. The target or acceptable debt service to exports ratio is assumed to be approximately five percentage points more than the actual debt service ratio in 1985 (19.7%), i.e., 25%.

2. Effects on the Government Budget: A process similar to the one described above is used to examine the budgetary feasibility of the projected debt service payments. The ratio of the projected service payments, in kwacha, to projected revenues and grants is used as the key measure of the sustainability of the projected payments. Again the target budgetary service ratio is assumed to be about five percentage points more than the actual ratio of 1985 (20.5%), or 25%.

3. Estimating Resource Needs for Growth: The estimates of resources needed for growth are based on a modified version of the investment-savings gap model of the type popularized by Chenery . (See Appendix II for a detailed explanation of the model.) In essence, the process estimates the level of investment necessary to achieve a given rate of growth, then deducts the projected level of domestic savings. The resulting figure gives the target net inflow of resources from abroad (balance of payments surplus) to reach the desired growth rate. The additional resources needed to achieve the desired growth rate are found by subtracting the projected external overall balance from the target.

C. Basic Assumptions: Since the results of this analysis are based on projections, the results are sensitive to the assumptions used. The figures up to 1989 are based upon IMF projections. Table 1 summarizes the basic assumptions used for the projections for the years 1990-2000. In general these assumptions can be viewed as optimistic projections for the performance of the Zambian economy.

TABLE 1: BASIC ASSUMPTIONS USED FOR PROJECTIONS

Balance of Payments Components:

| | |
|--|-------|
| Growth Rate of Exports | 8.0% |
| Growth Rate of Imports | 6.2% |
| Growth Rate of Transfers | 4.0% |
| Interest Rate on Existing and New Debt | 8.0% |
| Debt Service Capacity as a Percent of Exports | 25.0% |
| Kwacha Debt Service Capacity as a Percent of Revenues and Grants | 25.0% |
| Population Growth Rate | 3.5% |
| Per Capita Income Growth Rate | 2.0% |
| Domestic Savings Rate | 20.0% |
| Capital-Output Ratio | 4.0 |

In addition to the above, the following three additional assumptions are incorporated in the analysis:

1. The available debt service schedule is detailed only through 1989. To construct the service schedule for later periods it is assumed that principal payments will clear the estimated debt outstanding as of the end of 1985 by 1999.

2. Beginning in 1990, new borrowing is assumed to be at a volume to maintain a capital account deficit of SDR 75 million. The terms of this new borrowing provide a five year grace period on principal payments followed by a ten year payment schedule.

and

3. For years when reschedulings are to occur, purchases from the IMF are assumed to equal 75% of repurchases, thus reducing the overall use of IMF resources.

D. Rescheduling Assumptions: Currently, there are a standard set of "rules" which are followed by the Paris and London Clubs when considering a country for debt rescheduling. These "rules" can be divided into three general categories:

- 1) Preconditions or what must be done before the Clubs will consider a request for rescheduling;
- 2) Coverage or what portions of the requesting country's debt service is eligible for rescheduling; and
- 3) Terms or how the rescheduled service is repaid.

There is only one major precondition for the consideration of rescheduling a country's debt by the Paris and London Clubs -- there must be an IMF program in place at the time the Clubs' meeting are requested and held. The rationale for this precondition is that an IMF program serves as an indication that the country is taking the measures that are necessary to deal with its financial/economic problems and that there will be some hope for future repayment of the rescheduled debt service. While the policy measures advocated by the IMF in its programs are often a necessary element of a country's efforts at economic stabilization and restructuring, there is a downside associated with the programs. The resources provided under the program are both expensive in terms of interest charges and must be repaid in a relatively short period of time. Thus, the near-future debt problem of the rescheduling country is exacerbated by the IMF purchases.

The coverage of the rescheduling agreements vary from case to case, but can be summarized as follows:

- Service to multilateral organizations such as the IMF, IBRD, IDA, African Development Bank, etc. is not eligible for rescheduling. Contrary to a widely held belief, this provision is not a part of many of these organizations charters, but is merely a policy of the organization. As with all policies, it can be changed if the respective boards were to decide to do so.
- Up to 100% of principal repayments due commercial banks can be rescheduled; however, London Club "rules" do not allow the rescheduling of interest payments. In extreme cases, e.g., Latin America, these payments are often paid through the issuance of new loans to cover the interest due. The reason for the non-rescheduling of these interest payments is that the banks' regulatory agencies will classify any loan on which interest payments are in arrears beyond a certain time period as "non-performing". The banks must then take appropriate actions for writing off the loan which impacts on the banks' status and balance sheet.

- Up to 100% of the interest and principal payments due on guaranteed loans, both bilateral and suppliers' credits, can be rescheduled.
- Service payments arising from previous reschedulings are generally not eligible for further rescheduling. Exceptions to this rule are allowed in "extraordinary" cases.
- Finally, accumulated service arrears may be rescheduled.

The last element of these general rules cover the terms of the rescheduling agreements negotiated with the Clubs' members. The standard provisions cover both principal and interest payments on the rescheduled service obligations. There is generally a five year grace period on principal payments, followed by a five year repayment period. The principal payments are simply the amount rescheduled divided by the number of years for repayment. Interest charges begin in the year following the rescheduling (sometimes during the year of the rescheduling) with interest rates on the same terms as the original loans.

While these rules allow for some flexibility to meet the needs of the rescheduling country, it is becoming more evident that these rules are not flexible enough to cope with the debt problem in many African countries. Thus, some extensions of the standard rules and their effects on Zambia will be considered.

Over the last several years there have been numerous proposals concerning external debt. While the concentration of these proposals have focused on the debt crisis in Latin America, some of the ideas can be applied in the African case. The most recent set of proposals have come from Senator Bradley. In the Bradley Plan there are two principal measures -- the forgiveness of a portion of debt service and a reduction in interest rates. While these proposals are only intended to apply for a three year period under the Bradley Plan, the analysis in this paper will extend this concept for a longer period and use rates of forgiveness and interest rate reduction greater than those proposed by Senator Bradley. In particular, we examine the effect of reducing the interest rate on rescheduled debt by 50%, i.e., reducing the interest rate from 8% to 4%. Further, we examine the effects of forgiving 10% and 20% of the debt service due over the period 1987-1994. Finally, we combine in the effect of rescheduling 50% of the commercial interest payments due over this period.

A second area that is examined is the rescheduling of service payments to multilateral institutions. As noted above, the prohibition on rescheduling these payments comes from the policies of the institutions and not from their charters. Thus, it is reasonable to examine what gains could be made by including these obligations in the rescheduling framework. In particular, we examine the effects of rescheduling either 50% or 75% of debt service due multilateral organizations.

Overall, sixteen separate rescheduling scenarios are examined. These sixteen scenarios include two versions of the standard rescheduling terms and coverage, two scenarios involving the rescheduling of multilateral debt service, four scenarios based on the basic ideas of the Bradley Plan (two of which include the rescheduling of 50% of commercial interest payments), and eight scenarios which

combine the multilateral and Bradley scenarios. The rescheduling parameters for these scenarios are summarized in TABLE 2.

The analysis with these various scenarios limits the provision of debt service to the period 1987-1993. While debt relief could be provided beyond this period, it would merely prolong the day of reckoning when this relief must be terminated since rescheduling simply shifts the obligations forward in time and increases the level of debt by the amount of interest payments rescheduled. Since we are trying to answer the question of whether Zambia can grow out of its debt problem, the rescheduling scenarios provide for the reduction of the current debt by only rescheduling a portion of the principal and interest payments due.

III. RECENT ZAMBIAN PERFORMANCE

A. Policy Reforms: In the face of continuing economic decline and rising political problems, the GRZ has adopted a wide range of economic reforms which will set the Zambian economy well on the road to economic restructuring if they are fully and properly implemented.

The reforms announced and partially implemented at this time include the following (see Appendix I for a more detailed discussion of the reforms):

- Introduction of a foreign exchange auction system designed to provide a more efficient, market determined allocation of scarce foreign exchange resources and to achieve a more realistic exchange rate. This major reform measure has served as an example for a number of other African countries who are also trying to restructure their economies.
- Liberalization of the foreign trade regime through easing the issuance of import and export licenses.
- Decontrol of interest rates and the introduction of a treasury bill auction as a potential tool for the control of monetary growth.
- Adjustment of tariff rates and plans for further review and overhaul of the tariff system in order to promote a more efficient allocation of resources.
- Rationalization of the mining sector through the closure of uneconomic facilities, revamping of employment and pay practices, and the development of production and investment plans.
- Review and reduction of inefficient parastatal operations and improvement in the management and operating procedures of those remaining. Parastats are now required to operate on a profit-making basis and have been given the authority to adjust product prices.
- Increased agricultural producer prices to provide greater incentives to production of food and cash crops. All gazetted producer prices are intended to act as floor prices, so that market forces can operate and result in even higher prices.
- Elimination of subsidies on all maize products except roller meal; the subsidy on roller meal has been reduced.
- Introduction of differential pricing for different types of fertilizer to reflect differing foreign exchange costs and to reduce the subsidy on fertilizer. For the 1987/88 crop season the subsidy on fertilizer sold to commercial farmers is to be totally eliminated.
- Continued efforts to liberalize the agricultural marketing system to allow a greater scope of operations for the private sector.

B. Balance of Payments: Zambia's balance of payments has shown increasing ex ante overall deficits for the period 1983 through 1986 (TABLE 3). Beginning with a deficit of SDR 294 million in 1983, the ex ante overall deficit is estimated to be SDR 505 million in 1986. Even though the current account balance excluding interest payments deteriorated over these years, capital inflows more than offset this decline. The principal reason for the increase in the overall deficit has been the continual increase in debt service obligations from SDR 577 million in 1983 to SDR 824 million in 1986. As a percent of exports of goods and services, debt service obligations rose from 56% in 1983 to over 95% in 1986. Even with the liberal terms accorded in debt rescheduling agreements over this period, the debt service ratio has been in the range of 47%-49% after debt relief.

If debt service is excluded from Zambia's balance of payments, the overall balance would have been in surplus for each of the years under examination, despite the 18% decline in merchandise export revenues. This fact again emphasizes the extreme impact that debt service has had on Zambia's external financial situation.

Finally, it should be noted that Zambia has not been able to meet even the debt service obligations remaining after rescheduling. The percentage of export revenues actually used for debt service has ranged from a high of 32.8% in 1984 down to 19.7% in 1985. As a result, significant amounts of debt arrears have accumulated over the past five years despite the large amounts of arrears that have been rescheduled. Estimates place arrears at the end of 1985 at SDR 633 million. The rescheduling agreements for 1986 should reschedule SDR 466 million of these arrears, leaving outstanding arrears of SDR 167 million.

C. Government Budget: The GRZ fiscal deficit has risen steadily over the past four years (TABLE 4). The increase in the deficit in 1985 and 1986 have been extraordinary due primarily to increases in current expenditures (excluding interest payments) and the kwacha value of debt service payments. An additional factor contributing to the increased deficits in the past two years has been extraordinary expenditures associated with the foreign exchange reform. A substantial portion of the increased expenditures in all categories can be attributed to the large devaluation of the kwacha.

Not only has the deficit increased in nominal value, but it has also increased as a percent of GDP. On an ex ante (commitment) basis, the deficit in 1983 was 7.6% of GDP; in 1985 this percentage increased to 30.8% and is expected to fall to 24.1% in 1986 under the IMF program. On an ex post (cash) basis the above percentages are 7.4%, 23.0%, and 27.0%.

While debt service obligations are responsible for the severe financial problems facing Zambia in the external accounts, the domestic budget deficit would still exist even if debt service is excluded. Nevertheless, scheduled debt service commitments accounted for 66.2%, 62.6% and 41.8% of the ex ante budget deficit in 1983, 1984 and 1985, respectively. Under the original IMF program for 1986, scheduled debt service commitments are 93% of the ex ante budget deficit.

When the effects of debt relief and changes in arrears are included, actual debt service payments were 61.7%, 57.6% and 23.5% of the ex post budget deficit in

1983, 1984 and 1985, respectively. For 1986, actual debt service payments are expected to be 88.6% of the expected ex post deficit. Finally, if the one time extraordinary expenditures associated with the introduction of the foreign exchange auction system are excluded, debt service would be 43.6% and 124.4% of the ex ante budget deficit, and 24.8% and 149.8% of the ex post budget deficit in 1985 and 1986, respectively.

As is clear from the above, debt service has been responsible for a major portion of the GRZ budget deficit. It has also taken a significant portion of the government's revenues. On an ex ante basis, debt service required approximately 24% of total revenues and grants in 1983 and 1984. This percentage increased to 48% in 1985 and is projected to be 45% in 1986 after the effects of debt relief are included. On an ex post basis, debt service required approximately 20% of revenues and grants in 1983-1985. For 1986 it is estimated that over 52% of revenues and grants will be required for debt service unless additional arrears are accumulated.

TABLE 3: ZAMBIA'S BALANCE OF PAYMENTS, 1983-1986
(Millions of SDRs)

| <u>Item</u> | <u>1983</u> | <u>1984</u> | <u>1985</u> | <u>1986</u> |
|--|-------------|-------------|-------------|-------------|
| Exports, fob | 928 | 861 | 802 | 759 |
| Imports, cif | 785 | 706 | 741 | 745 |
| Trade Balance | 143 | 155 | 61 | 14 |
| Net Services, excluding interest | - 98 | -114 | - 95 | - 61 |
| Receipts | 102 | 85 | 95 | 105 |
| Payments | 200 | 199 | 190 | 166 |
| Net Transfers | - 17 | 2 | 21 | 30 |
| Capital Inflow | 255 | 153 | 255 | 336 |
| Overall Balance, excluding debt service | 283 | 196 | 242 | 319 |
| Debt Service | 577 | 640 | 741 | 824 |
| Interest | 236 | 270 | 306 | 370 |
| Amortization | 341 | 370 | 435 | 454 |
| Overall Balance | -294 | -444 | -499 | -505 |
| Memorandum Items: | | | | |
| Debt Relief | 293 | 470 | 0 | 870 |
| Scheduled Obligations | 96 | 244 | 0 | 404 |
| Arrears | 197 | 226 | 0 | 466 |
| Debt Service Actually Paid | 282 | 310 | 177 | n/a |
| End of Period Arrears | 209 | 69 | 633 | 167*/ |
| Debt Service:Exports | | | | |
| Before Relief | 56.0% | 67.6% | 82.6% | 95.4% |
| After Relief | 46.7% | 52.4% | 82.6% | 48.6% |
| Actual | 27.4% | 32.8% | 19.7% | n/a |

*/ Assumes no new arrears are accumulated during 1986 and no arrears payments are made.

SOURCE: IMF documents and USAID/Zambia calculations.

TABLE 4: ZAMBIAN CENTRAL GOVERNMENT BUDGET, 1983-1986
(Millions of Kwacha)

| <u>Item</u> | <u>1983</u> | <u>1984</u> | <u>1985</u> | <u>1986*/</u> |
|---|-------------|-------------|-------------|---------------|
| Revenues and Grants | 1,069 | 1,161 | 1,648 | 3,591 |
| Tax Revenue | 941 | 991 | 1,407 | 3,001 |
| Non-Tax Revenue | 75 | 101 | 85 | 80 |
| Grants | 53 | 69 | 156 | 510 |
| Expenditure and Net Lending, excluding debt service | 1,195 | 1,331 | 2,750 | 3,831 |
| of which: | | | | |
| Current Expenditure | 997 | 1,065 | 1,576 | 2,099 |
| Capital Expenditure & Net Lending | 198 | 266 | 604 | 862 |
| Exceptional Expenditures due to Forex Reform | n/a | n/a | 78 | 870 |
| Overall Deficit, excluding debt service | 126 | 170 | 1,102 | 240 |
| Debt Service | 247 | 285 | 791 | 3,172 |
| Ex Ante Overall Deficit, including debt service | 373 | 455 | 1,893 | 3,412 |
| Change in Arrears | 9 | 40 | 453 | - 253 |
| Debt Relief | 35 | 14 | 0 | 1,555 |
| Ex Post Overall Deficit | 329 | 401 | 1,440 | 2,110 |
| <u>Memorandum Items:</u> | | | | |
| Ex Ante Debt Service: | | | | |
| Revenues and Grants | | | | |
| Before Relief | 23.1% | 24.6% | 48.0% | 88.3% |
| After Relief | 19.8% | 23.3% | 48.0% | 45.0% |
| Ex Post Debt Service: | | | | |
| Revenues and Grants | | | | |
| Before Relief | 22.3% | 21.1% | 20.5% | 95.4% |
| After Relief | 19.0% | 19.9% | 20.5% | 52.1% |

*/ IMF Target Values.

SOURCE: IMF documents and USAID/Zambia calculations.

IV. DEBT AND SCHEDULED DEBT SERVICE

Fully accurate figures for Zambia's debt outstanding as of the end of 1985 are not available; however, estimates are that this debt was approximately SDR 5.6 billion including arrears. The structure of the debt at the end of 1984 and excluding interest arrears shows that approximately 37.6% of the outstanding medium and long-term debt was from multilateral sources, 10.3% from financial institutions, 6.6% was composed of supplier's credits, and 45.5% was bilateral. Based on the World Bank's Debt Tables, in 1984 over half of the service due was to multilateral institutions. Due to the incomplete coverage of these tables and the substantial accumulation of arrears through 1985, it is assumed that service payments are structured similarly to the percentage distribution of the debt outstanding cited above.

Zambia's scheduled debt service (under the assumptions identified above) is presented in TABLE 5. Zambia's annual scheduled debt service payments can be expected to remain above SDR 900 million through 1999, except for 1997 when these payments drop to SDR 877 million. For the seven year period 1987-1993, payments average SDR 978 million annually, and SDR 927.5 million annually for the period 1994-2000. Despite the assumed eight percent (8%) growth of export revenues, the annual average ratio of debt service to exports is 81% for the period 1987-1993 and 45% for 1994-2000. From 1987 until the end of this century there is only one year (2000) when debt service payments can be expected to be sustainable in terms of foreign exchange availability, i.e., service payments not exceeding 25% of export revenues.

If Zambia were only to make debt service payments equal to 25% of export revenues throughout this period, the arrears accumulated by the year 2000 would be more than SDR 7.6 billion, or approximately two billion SDRs more than Zambia's estimated debt outstanding (including arrears) at the end of 1985.

Despite the dismal outlook presented by debt service relative to export revenues, the budgetary effects of this debt service is even worse (TABLE 6). For the 1987-1993 period the kwacha equivalent of the scheduled debt service averages almost 113% of projected revenues and grants. For the 1997-2000 period, debt service averages 62.4% of projected revenues. If payments are limited to the equivalent of 25% of government revenue and grants, then new arrears would total over SDR 9.2 billion at the end of the year 2000.

The above figures actually understate the size of the potential problem. If arrears were to accumulate as posited above, interest obligations on these new arrears would be incurred. Further, arrangements for eliminating these arrears would have to be made. If these new arrears are scheduled to be paid over a ten year period and interest is charged at the average rate on Zambia's current debt, then the average ratio of debt service to export revenues would be 120.8% and 106.2% for the 1987-1993 and 1994-2000 periods, respectively. The corresponding budgetary debt service ratios would be 168.2% and 147.3%. In this situation, new debt arrears based on the foreign exchange constraint would total over SDR 13.0 billion at the end of the year 2000, or over SDR 14.6 billion based on the budget constraint.

The additional resources needed to achieve a modest 2% per capita income growth rate with the scheduled debt service are shown in TABLE 7. An average of SDR 588.5 million annually would be required in the period 1987-1993 and SDR 227 million would be required each year between 1994 and 2000. These figures represent the annual increase in net inflows from abroad (exports, aid, borrowing, etc.) over and above the assumed growth of exports and transfers, as well as the projected level of new borrowing.

Based on the above discussion it is obvious that Zambia cannot grow out of its debt problem without some form of debt relief. The analysis of various relief scenarios is presented in the following sections.

V. EFFECTS OF RESCHEDULING

TABLES 8 through 16 present the results of the various rescheduling scenarios considered, both excluding and including the potential service obligations on new accumulations of arrears. TABLES 8 through 12 deal with the 1987-1993 sub-period, while TABLES 13 through 16 present the results for the 1994-2000 sub-period when no rescheduling is assumed to take place.

Examination of these tables lead to the following implications and conclusions for the 1987-1993 sub-period:

- Neither of the standard rescheduling scenarios provides sufficient debt relief to result in a sustainable level of service payments on either foreign exchange or budgetary resource availability. In addition, neither standard scenario provides sufficient relief to allow a two percent (2%) per capita growth. (TABLES 8 - 12)
 - o When service payments on newly accumulated arrears are excluded, the more concessional of the two standard scenarios (Standard 2) still results in a debt service to exports ratio of almost 51% and a budgetary debt service ratio of 71%. (TABLES 8 and 10)
 - o When the service payments on likely new arrears are included, the above ratios rise to over 64% and 89%, respectively. (TABLES 9 and 11)
 - o Estimated additional resource inflows of SDR 164 million per annum would be necessary to provide sufficient resources to achieve the target of a two percent annual growth of per capita income. (TABLE 12)
- On the basis of foreign exchange sustainability only the combinations of the Multilateral 2 and Bradley scenarios provide a reasonable chance of sustainable service payments and do not lead to substantial accumulation of arrears when service payments on new arrears are excluded from the analysis. When service payments on likely new arrears are included the effective rescheduling scenarios are reduced to the combinations of the Multilateral 2 and more concessional Bradley scenarios, i.e., M2 and B2 or B4. (TABLES 8 and 9)
- On the basis of budgetary sustainability, none of the scenarios provide a truly sustainable situation, even when service payments on likely new arrears are excluded. Whether or not service payments on likely new arrears are excluded or included, the "best" scenario in terms of budgetary requirements is the combination of the Multilateral 2 and Bradley 4 scenarios. In this case the annual average budgetary debt service ratio is 26% when service payments on likely new arrears are excluded, and 30% when these payments are included. (TABLES 10 and 11)

TABLE 5: SCHEDULED DEBT SERVICE PAYMENTS, 1985-2000 ^{*/}
(Million SDRs)

| <u>Year</u> | <u>Scheduled Service Obligations</u> | <u>Debt Service to Exports (%)</u> |
|-----------------------|--|--|
| 1985 | 836.0 | 93.2 |
| 1986 | 556.0 | 64.4 |
| 1987 | 1,097.6 | 113.7 |
| 1988 | 947.6 | 92.2 |
| 1989 | 913.6 | 83.0 |
| 1990 | 919.8 | 77.3 |
| 1991 | 869.3 | 67.7 |
| 1992 | 1,040.9 | 75.0 |
| 1993 | 1,059.9 | 70.7 |
| 1994 | 1,068.2 | 66.0 |
| 1995 | 1,028.4 | 58.9 |
| 1996 | 1,039.9 | 55.1 |
| 1997 | 877.4 | 43.0 |
| 1998 | 906.1 | 41.2 |
| 1999 | 938.8 | 39.5 |
| 2000 | 634.0 | 24.7 |
| Average, 1987-1993 | 978.4 | 81.0 |
| Average, 1994-2000 | 927.5 | 45.0 |

^{*/} Includes the effects of actual and projected 1986 reschedulings and projected IMF purchases in 1986 and 1987. Also includes payments on new borrowing during this period.

TABLE 6: BUDGETARY EFFECTS OF SCHEDULED DEBT SERVICE PAYMENTS, 1985-2000 */

| <u>Year</u> | <u>Scheduled Service Obligations (Kwacha Millions)</u> | <u>Debt Service to Revenues & Grants (%)</u> |
|-----------------------|--|--|
| 1985 | 3,430.9 | 208.2 |
| 1986 | 3,892.0 | 108.4 |
| 1987 | 7,683.2 | 161.3 |
| 1988 | 6,633.2 | 129.0 |
| 1989 | 6,395.2 | 115.1 |
| 1990 | 6,438.9 | 107.3 |
| 1991 | 6,085.4 | 93.9 |
| 1992 | 7,286.6 | 104.1 |
| 1993 | 7,419.5 | 98.2 |
| 1994 | 7,477.5 | 91.6 |
| 1995 | 7,198.7 | 81.7 |
| 1996 | 7,279.1 | 76.5 |
| 1997 | 6,141.5 | 59.7 |
| 1998 | 6,342.9 | 57.1 |
| 1999 | 6,571.5 | 54.8 |
| 2000 | 4,438.0 | 34.3 |
| Average, 1987-1993 | 6,848.9 | 112.8 |
| Average, 1994-2000 | 6,492.7 | 62.4 |

*/ Includes the effects of actual and projected 1986 reschedulings and projected IMF purchases in 1986 and 1987. Also includes payments on new borrowing during this period.

TABLE 7: GROWTH RESOURCE GAP WITH SCHEDULED DEBT SERVICE PAYMENTS, 1985-2000 */
(Million SDRs)

| <u>Year</u> | <u>Overall Balance</u> | <u>Growth Resource Gap</u> |
|-----------------------|------------------------|----------------------------|
| 1985 | - 594.0 | N/A |
| 1986 | - 58.0 | 130.8 |
| 1987 | - 585.2 | 662.0 |
| 1988 | - 647.7 | 728.7 |
| 1989 | - 584.3 | 669.8 |
| 1990 | - 544.0 | 634.2 |
| 1991 | - 469.3 | 564.2 |
| 1992 | - 579.4 | 679.8 |
| 1993 | - 528.3 | 634.2 |
| 1994 | - 473.3 | 585.1 |
| 1995 | - 414.0 | 531.9 |
| 1996 | - 350.0 | 474.4 |
| 1997 | - 106.8 | 238.0 |
| 1998 | - 45.8 | 184.2 |
| 1999 | 21.6 | 124.5 |
| 2000 | 95.9 | 58.2 |
| Average, 1987-1993 | - 562.5 | 588.5 |
| Average, 1994-2000 | - 181.8 | 226.9 |

*/ Includes the effects of actual and projected 1986 reschedulings and projected IMF purchases in 1986 and 1987. Also includes payments on new borrowing during this period.

TABLE 8: ZAMBIA DEBT SERVICE SCENARIO SUMMARY,
AFTER RESCHEDULING, 1987-1993
(SDR's Million)

| Scenario | Debt Service | DS:EXP | Arrears Accumulation | |
|---------------------|--------------|--------|----------------------|---------------|
| | | | Average Annual | End of Period |
| Scheduled | 978.4 | 81.01% | 676.5 | 4,735.3 |
| Standard 1 | 766.5 | 63.47% | 464.6 | 3,252.0 |
| Standard 2 | 615.3 | 50.95% | 313.4 | 2,193.5 |
| Multilateral 1 (M1) | 595.5 | 49.31% | 293.6 | 2,055.3 |
| Multilateral 2 (M2) | 336.4 | 27.86% | 34.5 | 241.5 |
| Bradley 1 (B1) | 658.7 | 54.54% | 356.8 | 2,497.6 |
| Bradley 2 (B2) | 479.6 | 39.71% | 177.7 | 1,243.7 |
| Bradley 3 (B3) | 640.2 | 53.01% | 338.2 | 2,367.7 |
| Bradley 4 (B4) | 460.2 | 38.10% | 158.2 | 1,107.7 |
| M1 & B1 | 489.7 | 40.55% | 187.8 | 1,314.3 |
| M1 & B2 | 321.3 | 26.60% | 25.5 | 178.3 |
| M1 & B3 | 471.2 | 39.01% | 169.2 | 1,184.7 |
| M1 & B4 | 302.0 | 25.00% | 16.4 | 114.5 |
| M2 & B1 | 272.2 | 22.54% | 3.8 | 26.7 |
| M2 & B2 | 242.9 | 20.11% | .0 | 0.2 |
| M2 & B3 | 253.0 | 20.95% | 1.1 | 7.4 |
| M2 & B4 | 223.7 | 18.52% | 0.0 | 0.0 |

TABLE 9: ZAMBIA DEBT SERVICE SCENARIO SUMMARY,
AFTER RESCHEDULING, INCLUDING SERVICE
ON NEW ARREARS, 1987-1993
(SDR's Million)

| Scenario | Debt Service | DS:EXP | Arrears Accumulation | |
|---------------------|--------------|---------|----------------------|---------------|
| | | | Average Annual | End of Period |
| Scheduled | 1,505.7 | 124.67% | 1,203.7 | 6,533.1 |
| Standard 1 | 1,029.7 | 85.26% | 727.8 | 3,906.4 |
| Standard 2 | 774.0 | 64.09% | 472.1 | 2,477.7 |
| Multilateral 1 (M1) | 763.2 | 63.19% | 461.3 | 2,488.9 |
| Multilateral 2 (M2) | 371.3 | 30.74% | 69.3 | 355.1 |
| Bradley 1 (B1) | 893.8 | 74.00% | 591.8 | 3,147.7 |
| Bradley 2 (B2) | 587.0 | 48.60% | 285.1 | 1,444.2 |
| Bradley 3 (B3) | 863.1 | 71.46% | 561.1 | 2,982.4 |
| Bradley 4 (B4) | 559.1 | 46.29% | 257.2 | 1,295.5 |
| M1 & B1 | 637.0 | 52.75% | 335.1 | 1,790.2 |
| M1 & B2 | 378.4 | 31.33% | 76.5 | 356.5 |
| M1 & B3 | 610.9 | 50.58% | 309.0 | 1,651.8 |
| M1 & B4 | 354.4 | 29.35% | 52.5 | 230.8 |
| M2 & B1 | 327.4 | 27.11% | 26.0 | 115.3 |
| M2 & B2 | 285.9 | 23.67% | 3.6 | 19.5 |
| M2 & B3 | 304.7 | 25.23% | 9.9 | 43.0 |
| M2 & B4 | 263.7 | 21.83% | 0.6 | 38.4 |

TABLE 10: ZAMBIA BUDGETARY EFFECTS, AFTER RESCHEDULING, 1987-1993

| Scenario | Debt Service (K Million) | DS:R&G | Arrears Accumulation (SDR's Million) | |
|---------------------|-----------------------------|---------|---|---------------|
| | | | Average Annual | End of Period |
| Scheduled | 6,848.9 | 112.81% | 761.6 | 5,331.0 |
| Standard 1 | 5,365.6 | 88.38% | 549.7 | 3,847.7 |
| Standard 2 | 4,307.0 | 70.94% | 398.5 | 2,789.2 |
| Multilateral 1 (M1) | 4,168.8 | 68.66% | 378.7 | 2,651.0 |
| Multilateral 2 (M2) | 2,355.0 | 38.79% | 119.6 | 837.2 |
| Bradley 1 (B1) | 4,611.1 | 75.95% | 441.9 | 3,093.3 |
| Bradley 2 (B2) | 3,357.3 | 55.30% | 262.8 | 1,839.4 |
| Bradley 3 (B3) | 4,481.2 | 73.81% | 423.3 | 2,963.4 |
| Bradley 4 (B4) | 3,221.3 | 53.06% | 243.3 | 1,703.4 |
| M1 & B1 | 3,427.8 | 56.46% | 272.9 | 1,910.0 |
| M1 & B2 | 2,249.0 | 37.04% | 104.5 | 731.2 |
| M1 & B3 | 3,298.3 | 54.33% | 254.4 | 1,780.5 |
| M1 & B4 | 2,113.8 | 34.82% | 85.1 | 596.0 |
| M2 & B1 | 1,905.2 | 31.38% | 55.3 | 37.4 |
| M2 & B2 | 1,700.4 | 28.01% | 26.8 | 187.4 |
| M2 & B3 | 1,771.0 | 29.17% | 36.2 | 253.1 |
| M2 & B4 | 1,565.6 | 25.79% | 11.3 | 79.4 |

TABLE 11: ZAMBIA BUDGETARY EFFECTS, AFTER RESCHEDULING, INCLUDING SERVICE ON NEW ARREARS, 1987-1993

| Scenario | Debt Service (K Million) | DS:R&G | Arrears Accumulation (SDR's Million) | |
|---------------------|-----------------------------|---------|---|---------------|
| | | | Average Annual | End of Period |
| Scheduled | 10,539.8 | 173.60% | 1,288.8 | 7,216.6 |
| Standard 1 | 7,208.0 | 118.72% | 812.9 | 4,539.8 |
| Standard 2 | 5,418.1 | 89.24% | 557.2 | 3,151.2 |
| Multilateral 1 (M1) | 5,342.6 | 88.00% | 546.4 | 3,172.4 |
| Multilateral 2 (M2) | 2,598.9 | 42.81% | 154.4 | 1,038.5 |
| Bradley 1 (B1) | 6,256.4 | 103.05% | 676.9 | 3,831.1 |
| Bradley 2 (B2) | 4,109.0 | 67.68% | 370.2 | 2,127.7 |
| Bradley 3 (B3) | 6,041.5 | 99.51% | 646.2 | 3,665.9 |
| Bradley 4 (B4) | 3,913.8 | 64.46% | 342.3 | 1,979.0 |
| M1 & B1 | 4,459.3 | 73.45% | 420.2 | 2,473.7 |
| M1 & B2 | 2,648.7 | 43.63% | 161.6 | 1,039.9 |
| M1 & B3 | 4,276.2 | 70.43% | 394.1 | 2,335.3 |
| M1 & B4 | 2,480.9 | 40.86% | 137.6 | 94.2 |
| M2 & B1 | 2,291.6 | 37.74% | 110.5 | 794.6 |
| M2 & B2 | 2,001.3 | 32.96% | 69.1 | 565.5 |
| M2 & B3 | 2,132.9 | 35.13% | 87.9 | 676.5 |
| M2 & B4 | 1,845.7 | 30.40% | 46.8 | 449.9 |

TABLE 12: ZAMBIA OVERALL BALANCE AND GROWTH
RESOURCE GAP, 1987-1993
(SDR's Million)

| Scenario | Overall Balance | Growth Resource Gap |
|---------------------|--------------------|---------------------------|
| Scheduled | - 562.5 | 588.5 |
| Standard 1 | - 289.6 | 315.5 |
| Standard 2 | - 138.4 | 164.3 |
| Multilateral 1 (M1) | - 118.6 | 144.5 |
| Multilateral 2 (M2) | 140.5 | 0.0 |
| Bradley 1 (B1) | - 181.8 | 207.7 |
| Bradley 2 (B2) | - 2.7 | 39.6 |
| Bradley 3 (B3) | - 163.2 | 189.2 |
| Bradley 4 (B4) | 16.7 | 26.9 |
| M1 & B1 | - 12.8 | 38.7 |
| M1 & B2 | 155.6 | 0.0 |
| M1 & B3 | 5.7 | 23.0 |
| M1 & B4 | 175.0 | 0.0 |
| M2 & B1 | 204.8 | 0.0 |
| M2 & B2 | 234.0 | 0.0 |
| M2 & B3 | 223.9 | 0.0 |
| M2 & B4 | 253.3 | 0.0 |

-- For the provision of resources to achieve the targeted two percent annual growth of per capita income, at least the Multilateral 2 scenario is required. (TABLE 12)

For the seven years following the reschedulings, i.e., 1994-2000, the following implications and conclusions can be seen (TABLES 13-16):

- None of the rescheduling scenarios, as well as the scheduled debt service payments result in a sustainable payments situation for this period. This conclusion is true whether the additional payments on likely new arrears are included or excluded. The inclusion of these additional payments, of course, greatly aggravate the debt servicing problem by adding anywhere from SDR 1.0 billion to SDR 1.5 billion to the service requirements when compared to the payments due when these additional payments are excluded.
- Due to the non-sustainability of the debt payments and based on the foreign exchange constraint, likely new arrears in the year 2000 could range from SDR 6.5 billion to SDR 10.5 billion if the service on these arrears are excluded from the analysis, or from SDR 10.7 billion to SDR 14.4 billion if the service on these arrears are included.

- If the likely new arrears are accumulated on the basis of the budgetary constraint, then the above ranges for accumulated arrears by the year 2000 are SDR 8.1 billion to SDR 12.1 billion when service on these arrears are excluded, or SDR 12.4 billion to SDR 16.1 billion when the service payments on these arrears are included.
- All rescheduling scenarios result in higher debt service obligations than originally scheduled due to the fact that rescheduling pushes payments to a later date and adds to the debt by the amount of rescheduled interest payments.
- Of the various rescheduling scenarios examined, the four Bradley scenarios create a smaller addition to the future debt service payments burden due to the forgiveness, rather than rescheduling, of a portion of the 1987-1993 service payments, and the reduction in the interest rate on the amounts rescheduled. For the same reasons the Bradley scenarios and their combinations with the Multilateral scenarios result in lower levels of arrears in the year 2000 than do the Scheduled, Standard or Multilateral scenarios alone.

Figures I through X show the time paths of debt outstanding, the debt service to exports ratio, the budgetary debt service ratio, and the accumulation of arrears under the foreign exchange and the budgetary constraints. Figures I through V present these figures when service payments on likely new arrears are excluded, while figures VI through X show the same information when these service payments are included. For all ten figures, three time paths are shown: scheduled without rescheduling (Sch), rescheduling with the more concessional standard rules, i.e., the Standard 2 scenario (Std 2), and what is judged to be the "Best" rescheduling scenario, i.e., the combination of the Multilateral 2 and Bradley 4 scenarios.

TABLE 13: ZAMBIA DEBT SERVICE SCENARIO SUMMARY,
NO RESCHEDULING, 1994-2000
(SDR's Million)

| Scenario | Debt Service | DS:EXP | Arrears Accumulation | |
|---------------------|--------------|--------|----------------------|---------------|
| | | | Average Annual | End of Period |
| Scheduled | 927.5 | 44.97% | 413.0 | 7,626.4 |
| Standard 1 | 1,322.6 | 64.12% | 806.9 | 8,900.6 |
| Standard 2 | 1,544.4 | 74.87% | 1,028.7 | 9,394.4 |
| Multilateral 1 (M1) | 1,593.8 | 77.27% | 1,078.2 | 9,602.4 |
| Multilateral 2 (M2) | 1,979.9 | 95.99% | 1,464.2 | 10,491.1 |
| Bradley 1 (B1) | 1,185.1 | 57.46% | 669.5 | 7,183.8 |
| Bradley 2 (B2) | 1,265.9 | 61.37% | 750.2 | 6,495.3 |
| Bradley 3 (B3) | 1,206.1 | 58.48% | 690.5 | 7,201.0 |
| Bradley 4 (B4) | 1,287.4 | 62.42% | 771.8 | 6,510.0 |
| M1 & B1 | 1,377.9 | 66.80% | 862.3 | 7,350.1 |
| M1 & B2 | 1,443.0 | 69.96% | 927.4 | 6,669.8 |
| M1 & B3 | 1,398.9 | 67.82% | 883.2 | 7,367.3 |
| M1 & B4 | 1,464.4 | 71.00% | 948.8 | 6,755.9 |
| M2 & B1 | 1,614.9 | 78.29% | 1,099.2 | 7,721.5 |
| M2 & B2 | 1,530.9 | 74.22% | 1,015.2 | 7,106.6 |
| M2 & B3 | 1,636.5 | 79.34% | 1,120.8 | 7,853.2 |
| M2 & B4 | 1,552.2 | 75.25% | 1,036.6 | 7,256.0 |

TABLE 14: ZAMBIA DEBT SERVICE SCENARIO SUMMARY,
NO RESCHEDULING, INCLUDING SERVICE ON
NEW ARREARS, 1994-2000
(SDR's Million)

| Scenario | Debt Service | DS:EXP | Arrears Accumulation | |
|---------------------|--------------|---------|----------------------|---------------|
| | | | Average Annual | End of Period |
| Scheduled | 2,428.4 | 117.74% | 1,912.8 | 12,539.6 |
| Standard 1 | 2,817.5 | 136.60% | 2,301.8 | 13,583.4 |
| Standard 2 | 2,962.6 | 143.63% | 2,447.0 | 13,796.4 |
| Multilateral 1 (M1) | 2,996.3 | 145.27% | 2,480.7 | 13,958.1 |
| Multilateral 2 (M2) | 3,239.4 | 157.05% | 2,723.7 | 14,396.7 |
| Bradley 1 (B1) | 2,583.4 | 125.25% | 2,067.7 | 11,956.6 |
| Bradley 2 (B2) | 2,481.9 | 120.32% | 1,966.2 | 10,674.7 |
| Bradley 3 (B3) | 2,604.6 | 126.27% | 2,088.9 | 12,003.2 |
| Bradley 4 (B4) | 2,502.6 | 121.33% | 1,986.9 | 10,725.5 |
| M1 & B1 | 2,768.0 | 134.20% | 2,252.4 | 12,387.1 |
| M1 & B2 | 2,645.4 | 128.25% | 2,129.8 | 11,099.5 |
| M1 & B3 | 2,787.0 | 135.12% | 2,271.3 | 12,431.8 |
| M1 & B4 | 2,664.1 | 129.16% | 2,148.4 | 11,147.7 |
| M2 & B1 | 2,973.0 | 144.14% | 2,457.4 | 12,810.7 |
| M2 & B2 | 2,721.0 | 131.92% | 2,205.3 | 11,441.8 |
| M2 & B3 | 2,990.1 | 144.97% | 2,474.5 | 12,898.9 |
| M2 & B4 | 2,738.7 | 132.78% | 2,223.1 | 11,623.2 |

TABLE 15: ZAMBIA BUDGETARY EFFECTS, NO RESCHEDULING, 1994-2000

| Scenario | Debt Service (K Million) | DS:R&G | Arrears Accumulation (SDR's Million) | |
|---------------------|-----------------------------|---------|---|---------------|
| | | | Average Annual | End of Period |
| Scheduled | 6,492.7 | 62.40% | 555.9 | 9,222.5 |
| Standard 1 | 9,258.2 | 88.98% | 951.0 | 10,504.6 |
| Standard 2 | 10,810.5 | 103.90% | 1,172.7 | 10,998.4 |
| Multilateral 1 (M1) | 11,156.7 | 107.22% | 1,222.2 | 11,206.4 |
| Multilateral 2 (M2) | 13,859.2 | 133.19% | 1,608.3 | 12,095.1 |
| Bradley 1 (B1) | 8,295.9 | 79.73% | 813.5 | 3,787.8 |
| Bradley 2 (B2) | 8,861.2 | 85.16% | 894.3 | 3,099.3 |
| Bradley 3 (B3) | 8,442.9 | 81.14% | 834.5 | 3,805.0 |
| Bradley 4 (B4) | 9,011.9 | 86.61% | 915.8 | 3,114.0 |
| M1 & B1 | 9,645.5 | 92.70% | 1,006.3 | 3,954.1 |
| M1 & B2 | 10,101.1 | 97.08% | 1,071.4 | 3,231.0 |
| M1 & B3 | 9,792.1 | 94.11% | 1,027.3 | 3,971.3 |
| M1 & B4 | 10,251.0 | 98.52% | 1,092.8 | 3,245.7 |
| M2 & B1 | 11,304.3 | 108.64% | 1,243.3 | 9,090.4 |
| M2 & B2 | 10,716.0 | 102.99% | 1,159.2 | 3,302.1 |
| M2 & B3 | 11,455.4 | 110.09% | 1,264.9 | 9,107.2 |
| M2 & B4 | 10,865.6 | 104.42% | 1,180.6 | 8,343.6 |

TABLE 16: ZAMBIA DEBT SERVICE SCENARIO SUMMARY, NO RESCHEDULING, INCLUDING SERVICE ON NEW ARREARS, 1994-2000

| Scenario | Debt Service (K Million) | DS:R&G | Arrears Accumulation (SDR's Million) | |
|---------------------|-----------------------------|---------|---|---------------|
| | | | Average Annual | End of Period |
| Scheduled | 16,999.1 | 163.37% | 2,056.8 | 14,231.4 |
| Standard 1 | 19,722.2 | 189.54% | 2,445.8 | 15,275.2 |
| Standard 2 | 20,738.3 | 199.31% | 2,591.0 | 15,488.1 |
| Multilateral 1 (M1) | 20,974.3 | 201.57% | 2,624.7 | 15,649.8 |
| Multilateral 2 (M2) | 22,675.6 | 217.93% | 2,867.8 | 16,088.4 |
| Bradley 1 (B1) | 18,083.7 | 173.79% | 2,211.8 | 13,648.4 |
| Bradley 2 (B2) | 17,373.0 | 166.96% | 2,110.2 | 12,366.5 |
| Bradley 3 (B3) | 18,231.9 | 175.22% | 2,232.9 | 13,695.0 |
| Bradley 4 (B4) | 17,518.2 | 168.36% | 2,131.0 | 12,417.2 |
| M1 & B1 | 19,376.2 | 186.22% | 2,396.4 | 14,078.9 |
| M1 & B2 | 18,517.9 | 177.97% | 2,273.8 | 12,791.2 |
| M1 & B3 | 19,508.9 | 187.49% | 2,415.4 | 14,123.5 |
| M1 & B4 | 18,648.7 | 179.22% | 2,292.5 | 12,839.5 |
| M2 & B1 | 20,811.2 | 200.01% | 2,601.4 | 14,498.4 |
| M2 & B2 | 19,046.9 | 183.05% | 2,349.4 | 12,996.1 |
| M2 & B3 | 20,931.0 | 201.16% | 2,618.5 | 14,540.7 |
| M2 & B4 | 19,171.0 | 184.24% | 2,367.1 | 13,043.0 |

VI. CONCLUSION

As seen from the above analysis of Zambia's external debt and the likely effects of a variety of potential rescheduling scenarios, Zambia will not be able to grow out of its current debt problem unless extraordinary measures in the field of debt relief are adopted by the international community. Even in this case, rescheduling only postpones the problem which must be eventually be faced.

Of the sixteen rescheduling scenarios examined, several were found that could result in a sustainable use of foreign exchange and provided sufficient debt relief to provide the resources to achieve the two percent (2%) per capita income growth rate during the seven year period (1987 - 1993) when rescheduling was assumed to occur. One of the scenarios came close to providing a sustainable use of budgetary resources for debt service. Unfortunately, the implementation of the scenarios which could provide some hope for relieving Zambia's debt problem in the short term, all would involve radical changes of current rescheduling rules. For example, the scenario which provides the "best" results (the M2 & B4 scenario) would require the following changes in current rules in addition to the liberal use and interpretation of current rescheduling rules:

- 1) Reducing the interest rate on rescheduled debt by fifty percent (50%), from the current average rate of 8% per annum to 4% per annum;
- 2) Forgiving twenty percent (20%) of the debt service due each year when rescheduling occurs;
- 3) Rescheduling three-quarters (75%) of the debt service owed to multilateral agencies each year when rescheduling occurs; and
- 4) Rescheduling one-half (50%) of the interest payments due to commercial banks each year when rescheduling occurs.

Even if the international community were to agree to rearrange the rescheduling rules to allow this sort of debt relief for Zambia over the 1987-1993 period, the situation beginning in 1994 and extending at least through the year 2000 is totally unsustainable. Unless rescheduling is to be extended in perpetuity so that this debt service is never paid, it is extremely unlikely that Zambia will be able to surmount the debt problem now facing it even with the optimistic assumptions used in the analysis.

FIG. 1: DEBT OUTSTANDING

NO SERVICE ON NEW ARREARS

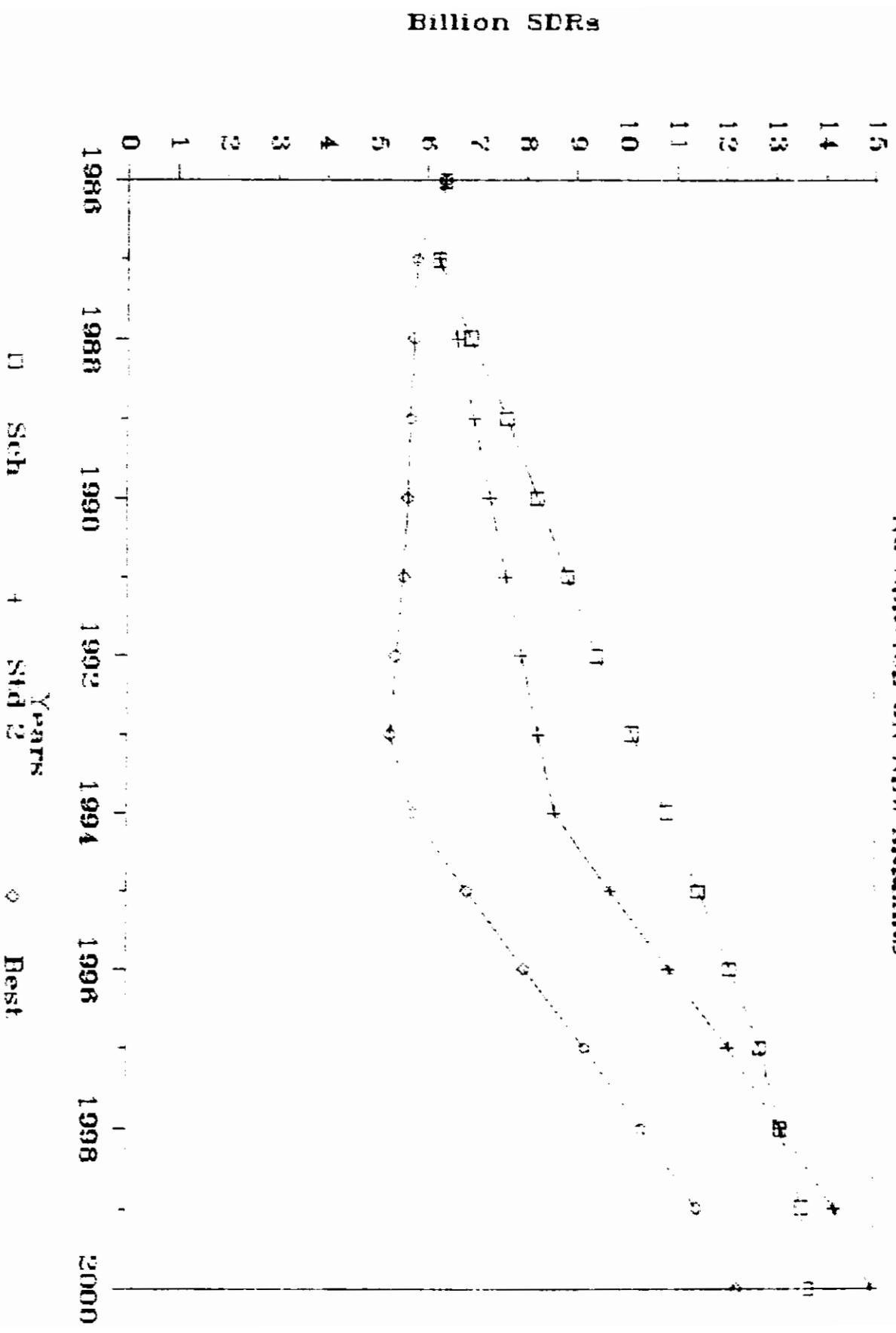


FIG. II: DEBT SERVICE RATIO

No Service on New Arrears

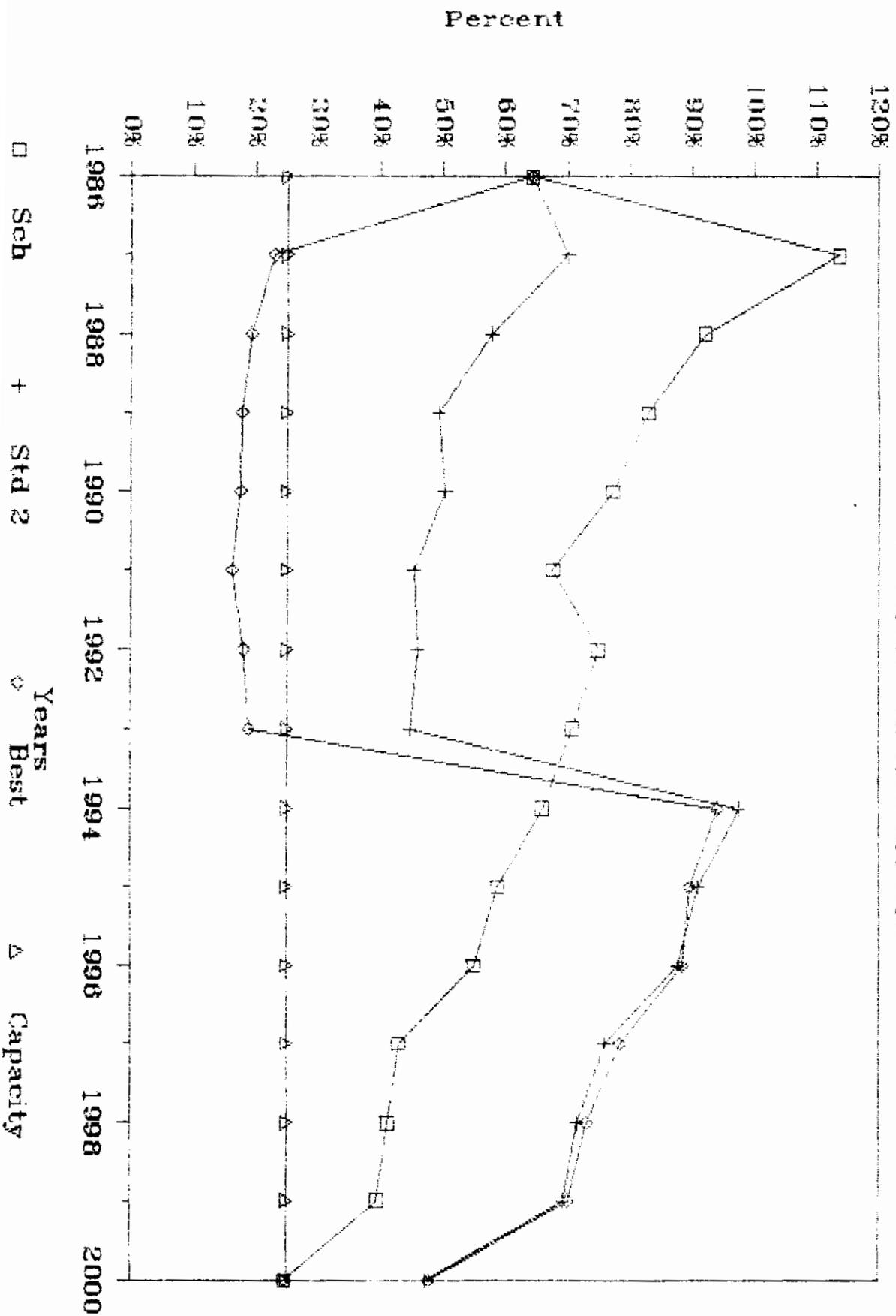


FIG. III: BUDGET DEBT SERVICE RATIO

No Services on New Arrivals

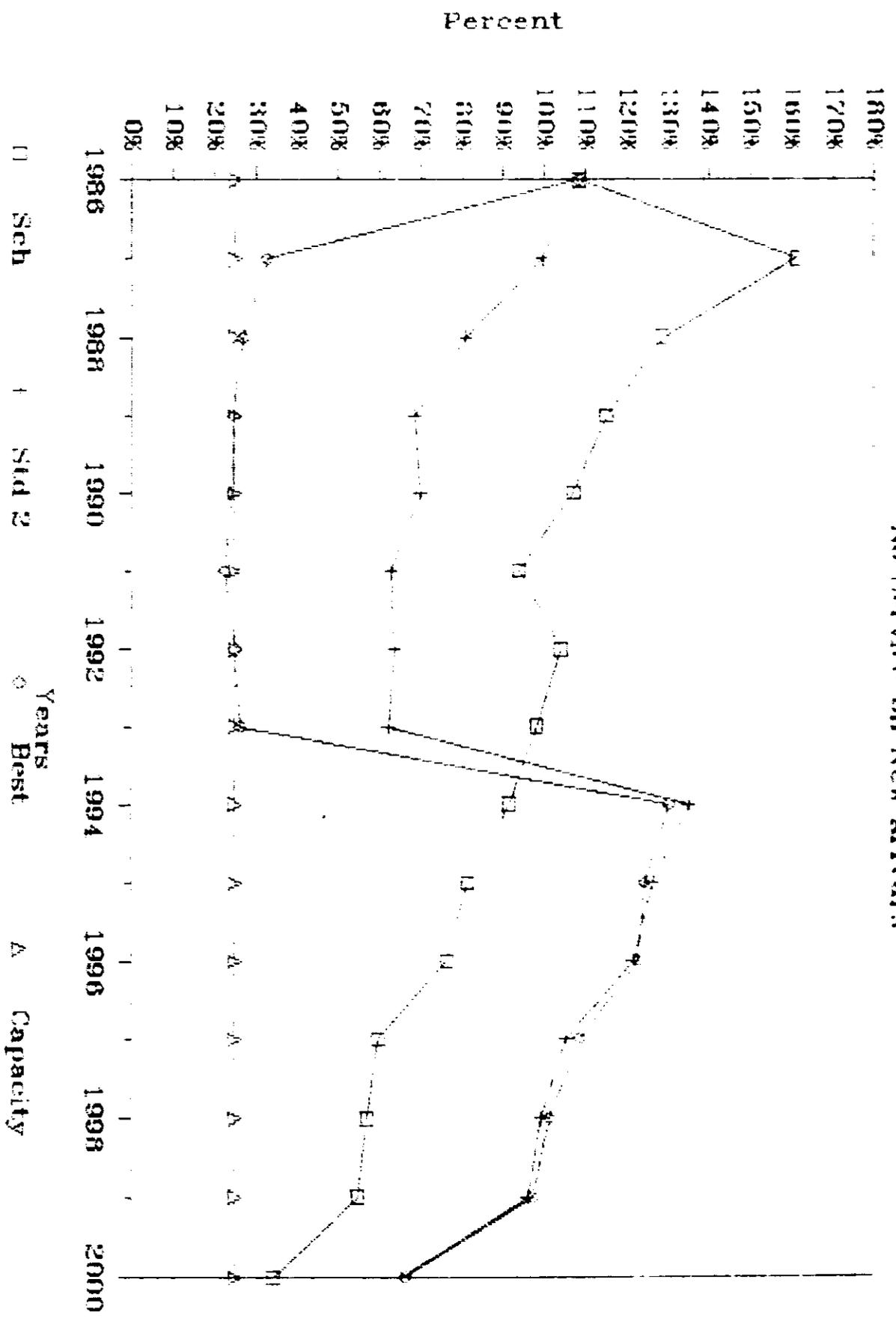


FIG. IV: TOTAL NEW FX ARREARS

NO SERVICE ON NEW ARREARS

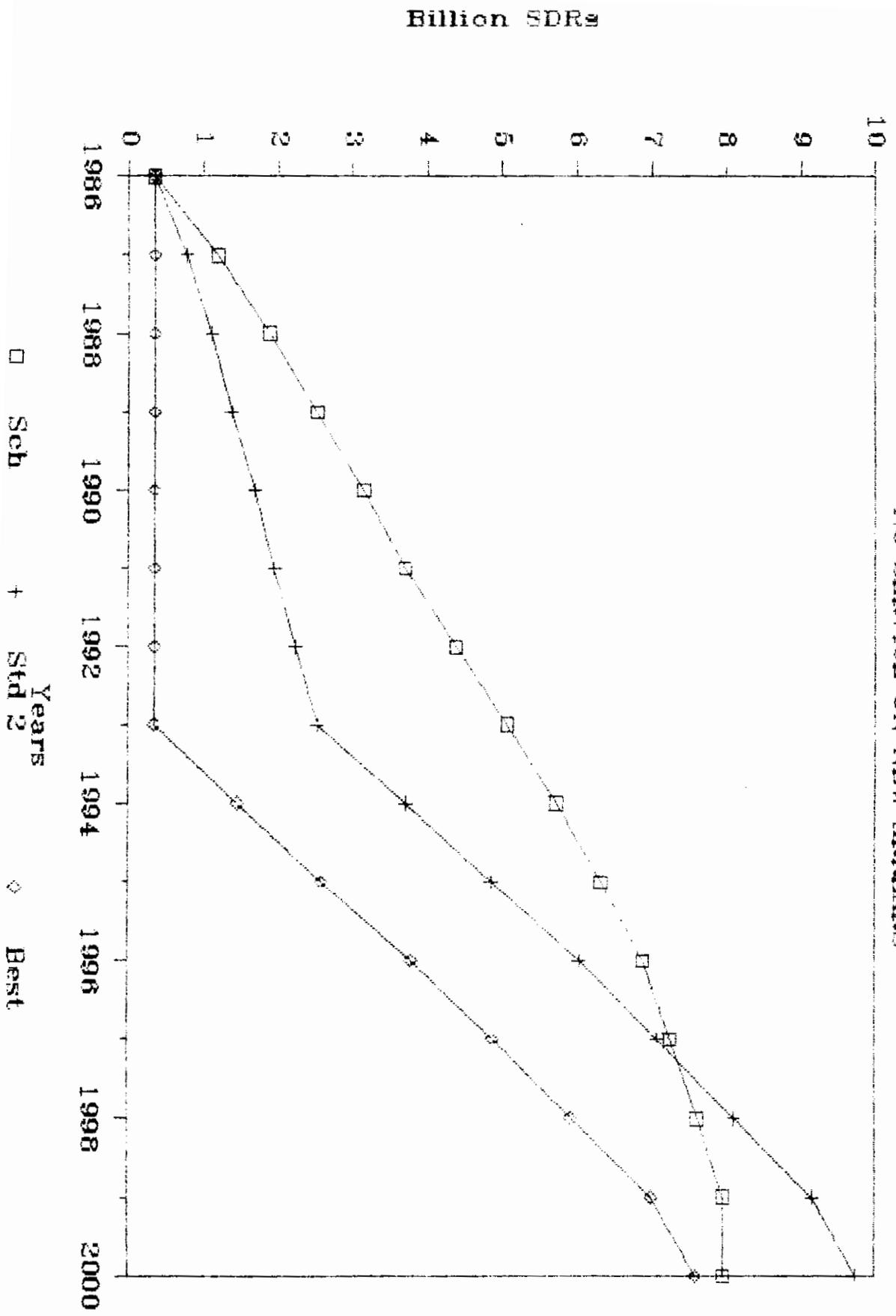


FIG. V: TOTAL NEW BUDGET ARREARS

NO SERVICE ON NEW ARREARS

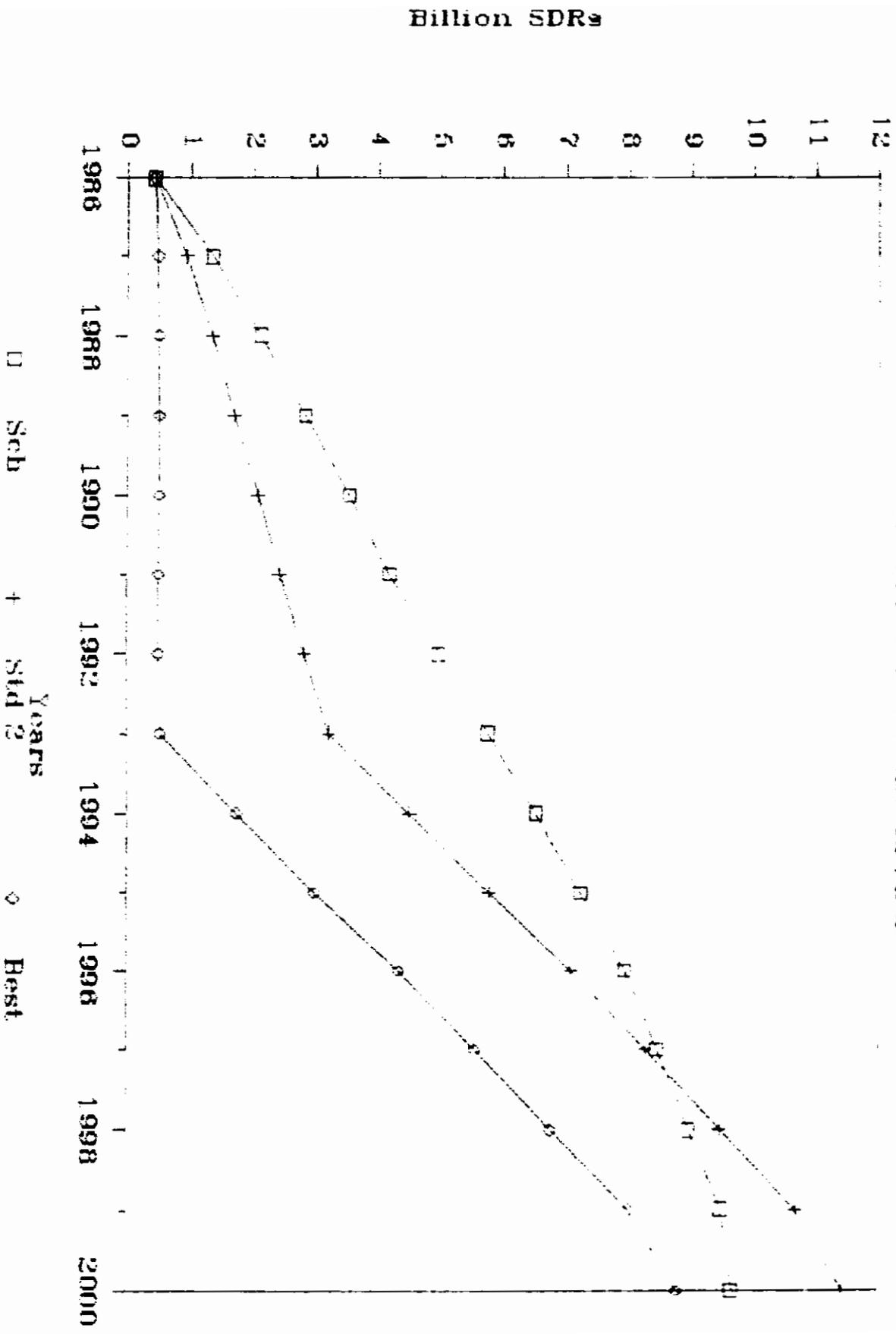


FIG. VI: DEBT OUTSTANDING

Including Service on New Arrears

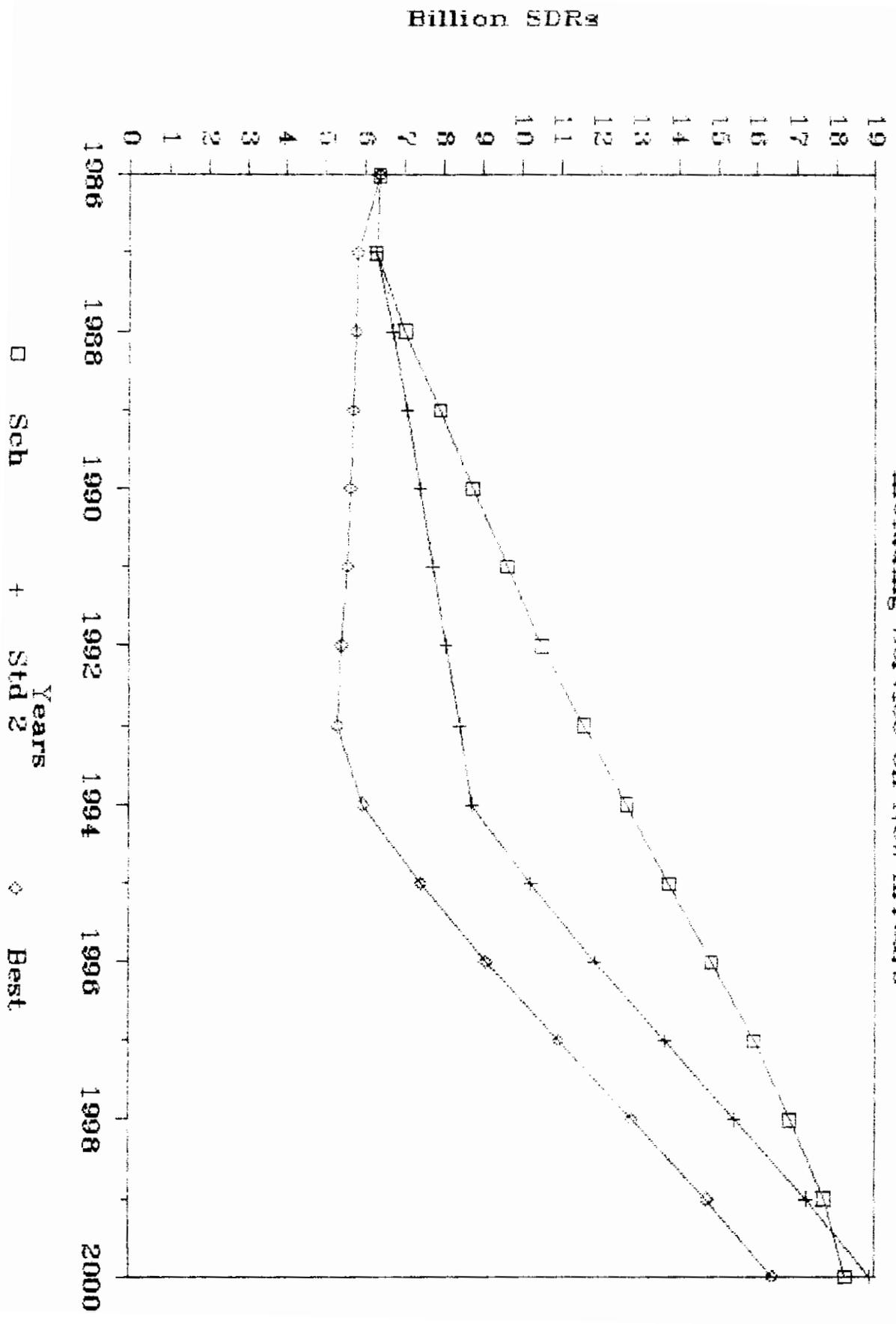


FIG. VII: DEBT SERVICE RATIOS

Including Service on New Arrears

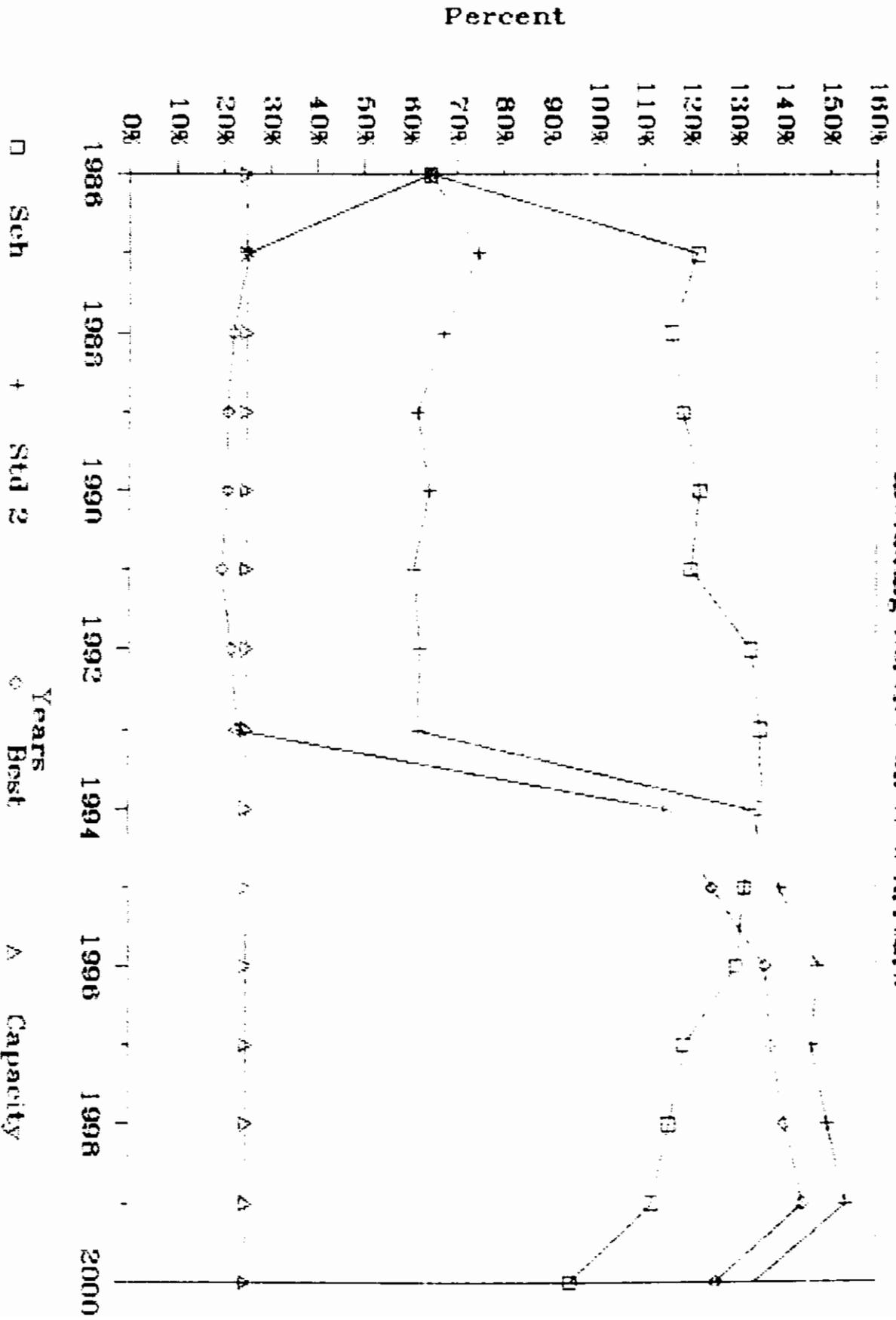


FIG. VIII: BUDGET DEBT SERVICE RATIOS

Including Service on New Arrears

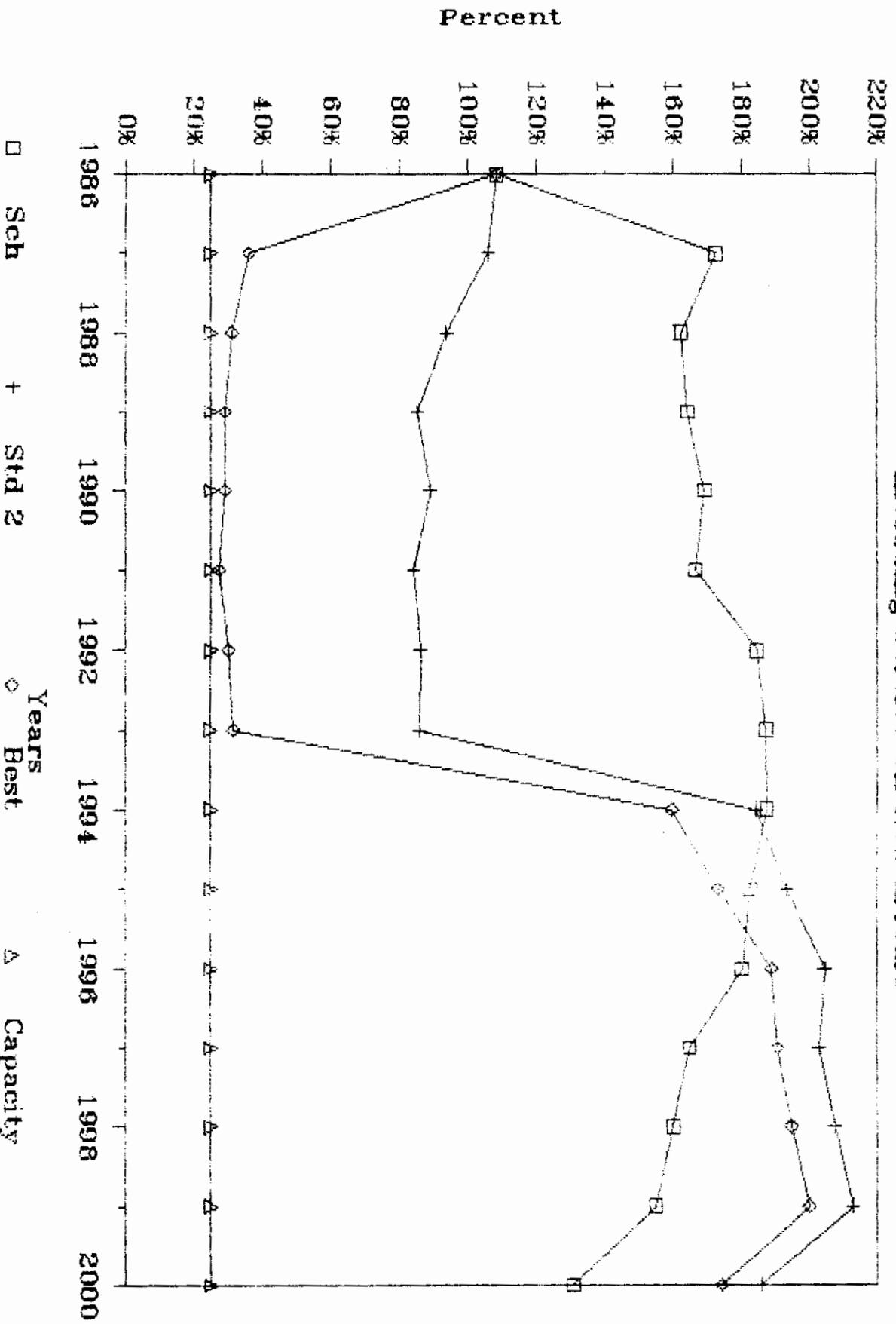


FIG. IX: TOTAL NEW FOREX ARREARS

Including Service on New Arrears

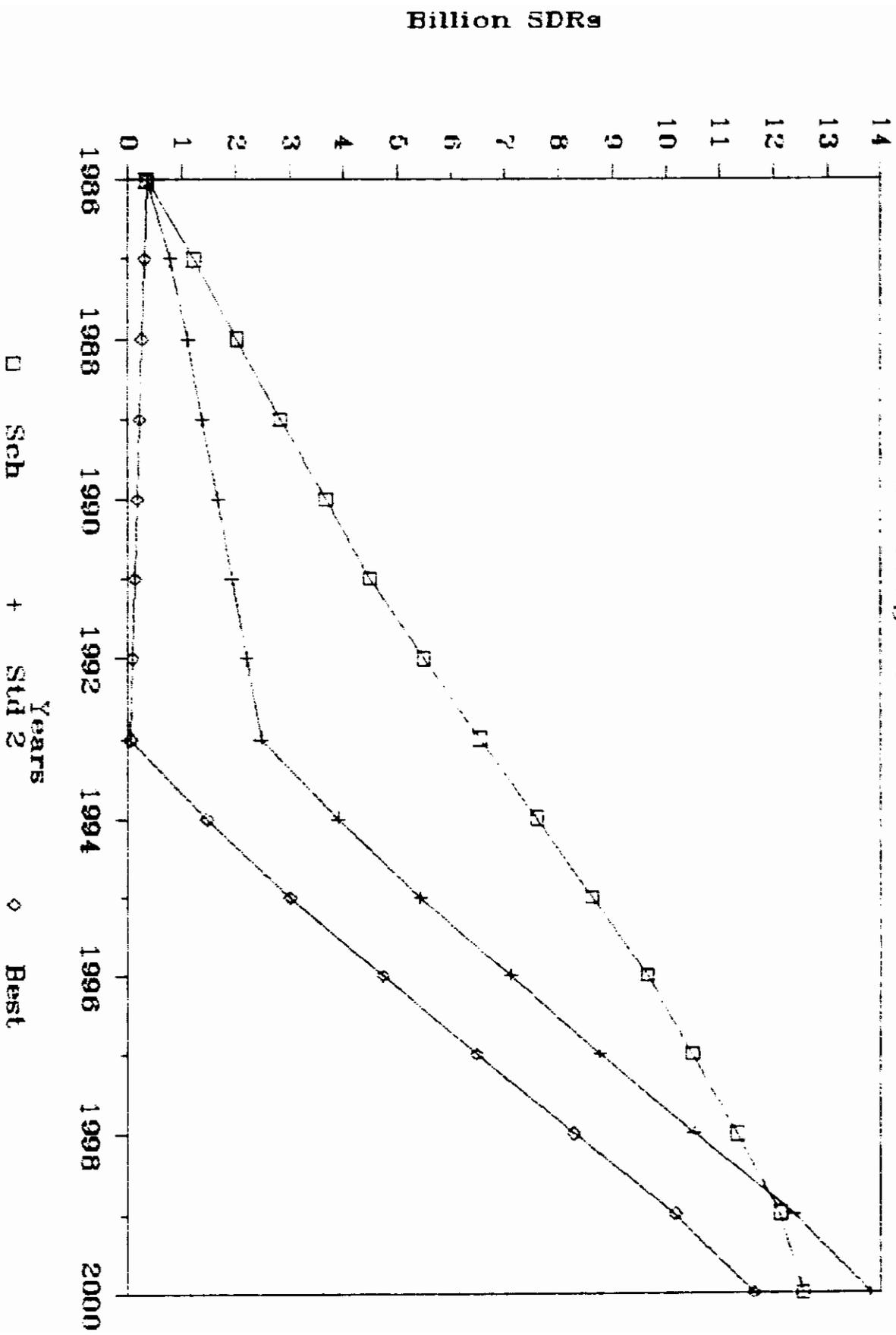
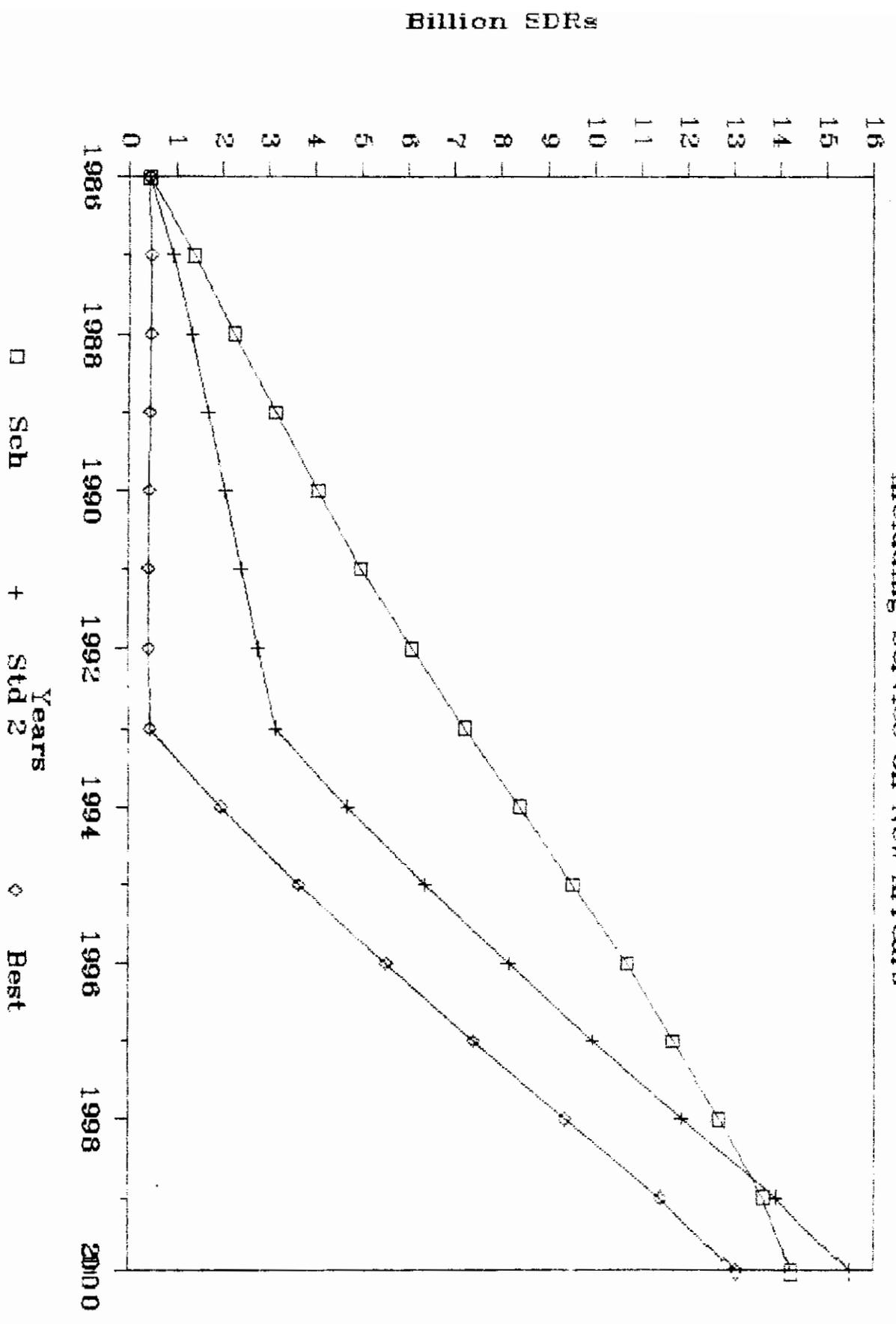


FIG. X: TOTAL NEW BUDGET ARREARS
 Including Service on New Arrears



APPENDIX I

THE ZAMBIAN POLICY REFORM EFFORT

In the face of continuing economic decline and rising political problems, the GRZ has adopted a wide range of economic reforms which will set the Zambian economy well on the road to economic restructuring, if they are fully and properly implemented. The principal elements of these reforms are discussed below.

Foreign Exchange Auction: On October 4, 1985, the GRZ announced that the previous system of administrative foreign exchange allocation and a fixed exchange rate would be replaced by a foreign exchange auction. Both GRZ and donor funds would be auctioned weekly to the private sector and to parastatals. As originally established bids would be submitted to commercial banks along with appropriate documentation. The commercial banks would then submit these bids to the Foreign Exchange Auction Committee. This committee would then rank order the bids according to the exchange rate of each bid. The amount of available funds would be compared to the list of bids, until the available funds were exhausted. The bid rate at which the funds were exhausted, also known as the strike rate, would set the exchange rate for that auction and would determine the amount of kwacha which the successful bidders would be required to pay for the foreign exchange they received. The strike rate also became the exchange rate to be used for all transactions until the next weekly auction.

From time to time, the Bank of Zambia has modified the auction's guidelines, however, these changes did not represent overly serious modifications. On August 2, 1986, the Bank of Zambia introduced new guidelines for the auction which changed the auction from a "marginal bid" system to a "Dutch" system. The principal change this entailed was that bidders are now required to pay the exchange rate they bid for any foreign exchange received. The final successful bid still determines the exchange rate for the upcoming week.

The effects of the auction system have been to provide a more efficient, market determined allocation of foreign exchange and to depreciate the kwacha relative to the U.S. dollar from a pre-auction exchange rate of K2.3/US\$ to K7.64/US\$ (as of October 4, 1986) or by almost 70%. The movement away from the administrative allocation of foreign exchange has allowed manufacturers and others who previously did not have access to foreign exchange to acquire foreign exchange to import needed spare parts and raw materials. As a result, productive activity in these areas has increased. A further benefit of the auction is that many activities for which exports were previously not profitable, can now profitably export their products as a result of the kwacha's depreciation.

Liberalization of Foreign Trade Regime: At the same time that the foreign exchange auction was introduced, the process for the issuance of import licenses was liberalized. The issuance of import licenses is now a relatively simple operation with only a nominal fee attached. This change represents another significant move away from administratively controlling the economy. Administrative import prohibitions have been removed and are being replaced with the use of tariffs to discourage certain imports.

Recently the Ministry of Commerce and Industry has begun to deny import licenses for items originating in the Republic of South Africa. This represents the GRZ's efforts to reduce its dependence on the RSA and to diversify its sources in anticipation of a closure of the border with the RSA.

Interest Rate Decontrol and Treasury Bill Auction: On September 2, 1985, the GRZ eliminated ceilings on interest rates and introduced a daily Treasury Bill Auction as a means of interest rate determination and affecting the liquidity level in the economy. As a result of this auction, the interest rate on Treasury Bills has risen from 9.5% to 24-26%. In addition, other interest rates have increased substantially. For example, commercial bank lending rates have increased to 22-26% and time and savings deposit rates to 12.5-17.5%. Despite these increases, however, real interest rates remain negative.

The administration of the Treasury Bill Auction has generally been acceptable, although the BOZ/GRZ seems to be hesitant to fully use this auction as a mechanism to limit the level of liquidity in the economy due to a fear of even higher interest rates.

Tariff System: Minimum tariff rates have been raised from 10% to 15% and the list of exempt items has been reduced to selected agricultural inputs, and educational, health, and scientific materials. The maximum tariff rate has been reduced from 150% to 100%. Further, the GRZ appointed Commission of Inquiry on Tariffs has completed its review and the report is currently being reviewed. Based on the findings of this Commission of Inquiry, a yet to be appointed Tariff Commission will propose and implement further reforms of the tariff system.

Rationalization of the Mining Sector: Zambia Consolidated Copper Mines (ZCCM) has prepared a production and investment plan to rationalize its operations. Actions include the closure of uneconomic facilities, reductions in the labor force and changes of the compensation system, and management changes to improve productivity and cost-efficiency. The World Bank is providing assistance for the procurement of spare parts and to implement these changes.

Parastatal Review and Actions: The holding company for industrial parastatals (INDECO) has established an economic evaluation unit which is studying the economic viability of firms under its control. Based on these studies, INDECO will prune its holdings and take measures to improve the operation and efficiency of other firms. For many firms, these reforms involve the contracting of expatriate management teams with the explicit mandate to improve efficiency. Parastatal firms are now to operate on a profit-making basis and have been given the authority to adjust output prices to implement this operational change.

Agricultural Prices and Marketing: Changes in this area have been widespread to date and have received extensive support from the donor community. For all agricultural commodities, announced prices are floor prices rather than fixed prices. Thus, prices are allowed to reflect general changes in market conditions. Floor prices are based on cost of production estimates, so that production incentives are maintained. This cost of production (as opposed to a border price) approach to floor price determination, along with the use of

national (as opposed to regional) prices, contributes to a misallocation of resources in production.

While the announced producer price for maize is technically a floor price, the continued subsidy on maize meal and the current method of paying this subsidy (pre-miller), limits the functioning of market forces in the determination of prices actually paid for maize.

Producer Prices: The GRZ announced new product floor prices for the 1986/87 crop season in mid-September, 1986. As seen in the following table, the new prices represent significant percentage increases of producer prices; however, given the approximate 50% inflation rate, the increase in real prices is positive for only three products (millet, sunflowers, and cotton) and remains basically constant for two other products (paddy rice and burley tobacco). The price increases for the other crops represent a decline in real prices.

| NEW PRODUCER FLOOR PRICES (Kwacha per Unit) | | | | |
|--|-------------|--------------------------|--------------------------|-----------------------------|
| <u>Crop</u> | <u>Unit</u> | <u>1986/87 Price</u> | <u>1985/86 Price</u> | <u>Percent Increase</u> |
| Maize | 90 kg | 78.00 | 55.00 | 42% |
| Millet | 90 kg | 74.00 | 42.80 | 73% |
| Sorghum | 90 kg | 74.00 | 52.25 | 36% |
| Wheat | 90 kg | 111.00 | 84.40 | 32% |
| Shelled Groundnuts: | | | | |
| Chalimbana | 80 kg | 162.00 | 131.35 | 23% |
| Makulu Red | 80 kg | 109.00 | 90.45 | 21% |
| Unshelled Groundnuts: | | | | |
| Chalimbana | 80 kg | 41.00 | 32.85 | 25% |
| Makulu Red | 80 kg | 27.00 | 25.10 | 8% |
| Paddy Rice | 80 kg | 83.00 | 55.57 | 49% |
| Sunflowers | 50 kg | 70.00 | 41.95 | 67% |
| Soybeans | 50 kg | 148.00 | 112.10 | 32% |
| Cassava | 1 kg | 0.70 | 0.60 | 17% |
| Cotton | 1 kg | 1.60 | 0.97 | 65% |
| Cashew Nuts | 1 kg | 1.20 | 1.00 | 20% |
| Tobacco: | | | | |
| Virginia | 1 kg | 6.25 | 5.12 | 22% |
| Burley | 1 kg | 5.10 | 3.50 | 46% |

Maize Meal Prices: Subsidies on Breakfast meal (a more finely ground maize meal principally consumed by higher income groups), and maize used for stockfeed and beer are being eliminated. The subsidy on roller meal (a more coarsely ground, and more nutritious, maize meal) will continue. The new price for roller meal has not yet been announced, nor has the manner in which the subsidy will be administered.

Marketing System: The process of agricultural market liberalization actually began in 1982 with the lifting of retail price controls on most commodities, maize, wheat and candles being the exceptions. This marked the first step in a process which has allowed an increasing role for private traders in the marketing arena. Subsequent steps in furthering the market liberalization have included reductions in maize and fertilizer subsidies (1983, 1984, 1986), exchange rate reform (1983, 1985), the decontrol of wheat prices (1984), revision of transportation rates (1985), and the freeing up of import licenses (1985).

In the 1986 budget speech, President Kaunda announced further movements toward the liberalization of the marketing system. NAMBOARD would become the holder of the national grain reserves and would become a residual buyer of agricultural commodities. Nitrogen Chemicals of Zambia (NCZ) was allowed to set a price that covered its costs and that approximates border prices, and private trade in fertilizer was authorized. Private sector intraprovincial trading of maize is now legal, but NAMBOARD still has the monopoly on interprovincial movements of maize.

Fertilizer Prices: Fertilizer pricing policy has been modified by moving away from the previous practice of uniform pricing for all types of fertilizer. Different fertilizers will now be sold at prices reflecting their differing international costs. The weighted average of the new prices is approximately kwacha 75 for a 50 kg bag. This is the second increase in fertilizer prices from the February, 1986, price of kwacha 26.75 per 50 kg bag. Thus, over the seven month period from February to September, 1986, average fertilizer prices have increased by over 180%.

In addition the GRZ announced that for the 1987/88 crop season, subsidies on fertilizer for commercial farmers will be eliminated; however, small farmers will still be able to purchase subsidized fertilizer, albeit at a greatly reduced subsidy rate from the past.

NEW AND OLD FERTILIZER PRICES
(Kwacha per 50 kg Bag)

| <u>Type of Fertilizer</u> | <u>1986/87 Price</u> | <u>Previous Price</u> | <u>Percent Increase</u> |
|---------------------------|--------------------------|---------------------------|-----------------------------|
| Compounds: */ | | | |
| D (10-20-10, Maize) | 80.00 | 48.00 | 67% |
| R (20-20- 0, Maize) | 80.00 | 48.00 | 67% |
| X (20-10- 5, Maize) | 80.00 | 48.00 | 67% |
| C (6-18-12, Tobacco) | 80.00 | 48.00 | 67% |
| V (4-18-15, Tobacco) | 78.00 | 48.00 | 63% |
| Ammonium Nitrate | 56.00 | 48.00 | 17% |
| Urea | 63.00 | 48.00 | 31% |

*/ The Nitrogen-Phosphate-Potash content of the various compounds,
as well as the general use of the compounds are shown in parentheses.

APPENDIX II

ESTIMATING GROWTH REQUIREMENTS AND THE GROWTH RESOURCE GAP

The method used to estimate the resource requirements for growth is based on a modified version of the investment-savings gap model popularized by Chenery. While this approach is simple, it is still used by a number of development organizations, e.g., the World Bank, to estimate resource needs.

In brief, the model estimates the level of investment necessary to achieve a given rate of growth, then deducts the projected level of domestic savings. The resulting figure gives the target net inflow of resources from abroad (overall balance of payments surplus) to reach the desired growth rate. The additional resources needed to achieve the desired growth rate are found by subtracting the projected external overall balance from the target.

Formally, the model consists of four basic relationships and the fact that investment must equal savings in any time period. First, is the relationship between total output or income and the capital stock at a given time t , $Y(t)$ and $K(t)$, respectively. The capital-output ratio (k) is the parameter which provides the linkage between these two variables. This relationship is given by:

$$(1) Y(t) = (1/k) * K(t).$$

Assuming the capital-output ratio remains constant through time, the above relationship implies that the change in income [$DY(t)$] would equal the product of the inverse of the capital-output ratio and the change in the capital stock. Since the change in the capital stock is given by the level of investment at time t [$I(t)$], this gives:

$$(2) DY(t) = (1/k) * I(t).$$

Rearranging this relationship gives:

$$(2') I(t) = k * DY(t).$$

The next major component of the model represents the financing of investment, i.e., savings, and the fact that investment must equal savings in a given time period. Total savings in period t [$S(t)$] is equal to the sum of domestic savings [$S_d(t)$] and external savings [$S_e(t)$], or

$$(3) S(t) = S_d(t) + S_e(t).$$

Domestic savings is given by the product of the domestic savings rate [sd] and income, while external savings equal the overall balance of the balance of payments [$OB(t)$], or

$$(4) S(t) = sd * Y(t) + OB(t).$$

Using the relationships given in (2') and (4) and the fact that savings and investment must be equal gives:

$$(5) k \cdot DY(t) = sd \cdot Y(t) + OB(t).$$

Rearranging equation (5) and using the fact that the ratio of the change in income to income is simply the growth rate of income (g), gives:

$$(6) OB(t) = Y(t) \cdot (k \cdot g - sd).$$

This last relationship ties the overall balance of payments deficit to the level of income, its growth rate, the capital-output ratio, and the domestic savings rate. Two further modifications are required to arrive at the final relationship used to estimate growth resource requirements and the growth resource gap. The first modification is simply to express income in period t as a relationship between the growth rate of income and an initial level of income [$Y(0)$]. The second modification is to turn relationship (6) into an estimating relationship by changing the growth rate to a target growth rate.

The first of these modifications is given by:

$$(7) Y(t) = Y(0) \cdot (1+g)^t$$

where the carot symbol [\wedge] indicates exponentiation.

The second modification simply involves the definition of the income growth rate (g) as the sum of the growth rate of per capita income (gpc) and the population growth rate (p):

$$(8) g = gpc + p.$$

When relationships (7) and (8) are substituted in (6) and the per capita income growth rate is thought of as a target, the following expression gives the overall balance in the external accounts necessary to achieve the target rate of growth, or alternatively the resources required in period t [$RR(t)$] to achieve the target rate of growth:

$$(9) RR(t) = Y(0) \cdot [(1 + gpc + p)^t] \cdot [k \cdot (gpc + p) - sd].$$

Finally, the growth resource gap is given by the difference between the resources required and the actual ex ante overall balance in the external accounts:

$$(10) GAP(t) = RR(t) - OB(t).$$

APPENDIX III

SAMPLE PRINT OUTS FROM THE MODEL

ASSUMPTIONS:

COMMENT: SCHEDULED W/O RESCHEDULING

I. BASE PROJECTIONS:

INTEREST RATE ON EXISTING &
NEW DEBT = 8.0%
EXPORT GROWTH RATE = 8.0%

PRINCIPAL PAYMENTS TO CLEAR DEBT AT END OF 1985 BY 1999; NEW
BORROWING TO HAVE CAPITAL ACCOUNT DEFICIT OF SDR 75 MILLION; NEW
BORROWING HAS 5 YEAR GRACE, THEN PAY BACK IN TEN YEARS.

II. RESCHEDULING:

RESCHEDULING IN ALL YEARS (0=NO, 1=YES)? (NOTE:
NO Implies Rescheduling only in 1986-1993

| | Period) | 0 |
|---|---------|--------|
| INTERES RATE ON RESCHEDULED DEBT = | | 8.0% |
| MULTILATERAL SHARE OF SERVICE PAYMENTS = | | 37.55% |
| COMMERCIAL SHARE OF SERVICE PAYMENTS = | | 10.30% |
| PERCENT OF MULTILATERAL INTEREST RESCHEDULED = | | 0.00% |
| PERCENT OF MULTILATERAL PRINCIPAL RESCHEDULED = | | 0.00% |
| PERCENT OF COMMERCIAL INTEREST RESCHEDULED = | | 0.00% |
| PERCENT OF COMMERCIAL PRINCIPAL RESCHEDULED = | | 0.00% |
| PERCENT OF REMAINING INTEREST RESCHEDULED = | | 0.00% |
| PERCENT OF REMAINING PRINCIPAL RESCHEDULED = | | 0.00% |
| PERCENT OF SERVICE PAYMENTS ON PREVIOUSLY RESCHEDULED SERVICE PAYMENTS RESCHEDULED = | | 0.00% |
| PERCENT OF DEBT SERVICE FORGIVEN = | | 0.00% |

| | |
|--|-------|
| IMF PURCHASES AS A PERCENT OF REPURCHASES FOR YEARS WHEN RESCHEDULINGS ARE TO OCCUR = | 0.00% |
|--|-------|

III. FOREIGN EXCHANGE SUMMARY TABLE:

| | |
|---|--------|
| DEBT SERVICE CAPACITY AS A % OF EXPORTS = | 25.00% |
|---|--------|

IV. BUDGETARY EFFECTS:

| | |
|---|--------|
| EXCHANGE RATE (KWACHA/SDR) = | 7.000 |
| REVENUE AND GRANTS GROWTH RATE = | 8.00% |
| KWACHA DEBT SERVICE CAPACITY AS A % OF TAX REVENUE = | 25.00% |

V. GROWTH GAP:

| | |
|---------------------------------------|--------|
| GROWTH RATE OF IMPORTS = | 6.20% |
| GROWTH RATE OF TRANSFERS = | 4.00% |
| GROWTH RATE OF PER CAPITA INCOME = | 2.00% |
| POPULATION GROWTH RATE = | 3.50% |
| DOMESTIC SAVINGS RATE = | 20.00% |
| CAPITAL-OUTPUT RATIO = | 4.0 |
| 1985 GDP, MILLION SDRS = | 986.0 |

ZAMBIA BASE DEBT SERVICE PROJECTIONS
(MILLIONS OF SDR'S)

| YEAR | DEBT OUT. | NEW BORROW | DEBT SERVICE PAYMENTS | | | | | EXPORTS GOODS & SERVICES | DEBT SERVICE: EXPORTS* | |
|-------------------------|--------------|---------------|--------------------------------|---------|----------|-----------|----------|--------------------------------|------------------------------|---------|
| | | | -----On Resched. Service ----- | ----- | ----- | ----- | ----- | | | |
| | | | PRINCIPAL | IMF REP | INTEREST | PRINCIPAL | INTEREST | TOTAL* | | |
| ===== | | | | | | | | | | |
| IMF PROJECTIONS (02/86) | | | | | | | | | | |
| 1985 | 5,607.6 | | 435.0 | 95.0 | 306.0 | NA | NA | 836.0 | 897.0 | 93.20% |
| 1986+ | 5,035.6 | 336.0 | 908.0 | 148.0 | 370.0 | 0.0 | 0.0 | 1,426.0 | 864.0 | 165.05% |
| 1987 | 4,952.6 | 389.0 | 472.0 | 181.0 | 375.0 | 0.0 | 69.6 | 1,097.6 | 965.4 | 113.69% |
| 1988 | 4,908.6 | 282.0 | 326.0 | 153.0 | 399.0 | 0.0 | 69.6 | 947.6 | 1,027.9 | 92.19% |
| 1989 | 4,833.6 | 289.0 | 364.0 | 64.0 | 416.0 | 0.0 | 69.6 | 913.6 | 1,101.3 | 82.96% |
| ===== | | | | | | | | | | |
| USAID PROJECTIONS: | | | | | | | | | | |
| 1990 | 4,758.6 | 314.1 | 389.1 | 74.5 | 386.7 | 0.0 | 69.6 | 919.8 | 1,189.4 | 77.34% |
| 1991 | 4,683.6 | 314.1 | 389.1 | 30.0 | 380.7 | 0.0 | 69.6 | 869.3 | 1,284.5 | 67.68% |
| 1992 | 4,608.6 | 347.7 | 422.7 | 0.0 | 374.7 | 174.0 | 69.6 | 1,040.9 | 1,387.3 | 75.03% |
| 1993 | 4,533.6 | 386.6 | 461.6 | 0.0 | 368.7 | 174.0 | 55.7 | 1,059.9 | 1,498.3 | 70.74% |
| 1994 | 4,458.6 | 414.8 | 489.8 | 0.0 | 362.7 | 174.0 | 41.8 | 1,068.2 | 1,618.1 | 66.01% |
| 1995 | 4,383.6 | 394.9 | 469.9 | 0.0 | 356.7 | 174.0 | 27.8 | 1,028.4 | 1,747.6 | 58.85% |
| 1996 | 4,308.6 | 426.3 | 501.3 | 0.0 | 350.7 | 174.0 | 13.9 | 1,039.9 | 1,887.4 | 55.10% |
| 1997 | 4,233.6 | 457.7 | 532.7 | 0.0 | 344.7 | 0.0 | 0.0 | 877.4 | 2,038.4 | 43.04% |
| 1998 | 4,158.6 | 492.4 | 567.4 | 0.0 | 338.7 | 0.0 | 0.0 | 906.1 | 2,201.5 | 41.16% |
| 1999 | 4,083.6 | 531.1 | 606.1 | 0.0 | 332.7 | 0.0 | 0.0 | 938.8 | 2,377.6 | 39.48% |
| 2000 | 4,008.6 | 232.3 | 307.3 | 0.0 | 326.7 | 0.0 | 0.0 | 634.0 | 2,567.8 | 24.69% |
| 2001 | 3,933.6 | 238.2 | 13.2 | 0.0 | 320.7 | 0.0 | 0.0 | 633.9 | 2,773.2 | 22.86% |
| 2002 | 3,858.6 | 241.9 | 316.9 | 0.0 | 314.7 | 0.0 | 0.0 | 631.6 | 2,995.1 | 21.09% |
| 2003 | 3,783.6 | 259.5 | 334.5 | 0.0 | 308.7 | 0.0 | 0.0 | 643.2 | 3,234.7 | 19.88% |
| 2004 | 3,708.6 | 279.8 | 354.8 | 0.0 | 302.7 | 0.0 | 0.0 | 657.5 | 3,493.5 | 18.82% |
| 2005 | 3,633.6 | 301.5 | 376.5 | 0.0 | 296.7 | 0.0 | 0.0 | 673.2 | 3,772.9 | 17.84% |
| 2006 | 3,558.6 | 293.4 | 368.4 | 0.0 | 290.7 | 0.0 | 0.0 | 659.1 | 4,074.8 | 16.17% |
| 2007 | 3,483.6 | 282.4 | 357.4 | 0.0 | 284.7 | 0.0 | 0.0 | 642.1 | 4,400.7 | 14.59% |
| 2008 | 3,408.6 | 268.0 | 343.0 | 0.0 | 278.7 | 0.0 | 0.0 | 621.6 | 4,752.8 | 13.08% |
| 2009 | 3,333.6 | 252.4 | 327.4 | 0.0 | 272.7 | 0.0 | 0.0 | 600.1 | 5,133.0 | 11.69% |
| 2010 | 3,258.6 | 240.9 | 315.9 | 0.0 | 266.7 | 0.0 | 0.0 | 582.6 | 5,543.7 | 10.51% |
| 2011 | 3,183.6 | 228.4 | 303.4 | 0.0 | 260.7 | 0.0 | 0.0 | 564.1 | 5,987.2 | 9.42% |

+ Principal includes Existing Arrears of SDR 454 million at end of 1985.

* Scheduled Amounts include the Effects of Reschedulings in the Previous Years.

ZAMBIA EFFECTS OF RESCHEDULING
(MILLIONS OF SDR'S)

| YEAR | ORIGINAL SERVICE* | FORGIVEN DEBT SERVICE | POTENTIAL DEBT RESCH (GROSS) | TOTAL DEBT RELIEF | DS:EXP W/RELIEF |
|----------------------------------|-------------------|-----------------------|------------------------------|-------------------|-----------------|
| ===== | | | | | |
| BASED ON IMF PROJECTIONS (02/86) | | | | | |
| 1985 | 836.0 | NA | NA | 0.0 | 93.20% |
| 1986 | 1,426.0 | 0.0 | 870.0 | 870.0 | 64.35% |
| 1987 | 1,097.6 | 0.0 | 0.0 | 0.0 | 113.69% |
| 1988 | 947.6 | 0.0 | 0.0 | 0.0 | 92.19% |
| 1989 | 913.6 | 0.0 | 0.0 | 0.0 | 82.96% |
| | | | | | |
| USAID PROJECTIONS: | | | | | |
| 1990 | 919.8 | 0.0 | 0.0 | 0.0 | 77.34% |
| 1991 | 869.3 | 0.0 | 0.0 | 0.0 | 67.68% |
| 1992 | 1,040.9 | 0.0 | 0.0 | 0.0 | 75.03% |
| 1993 | 1,059.9 | 0.0 | 0.0 | 0.0 | 70.74% |
| 1994 | 1,068.2 | 0.0 | 0.0 | 0.0 | 66.01% |
| 1995 | 1,028.4 | 0.0 | 0.0 | 0.0 | 58.85% |
| 1996 | 1,039.9 | 0.0 | 0.0 | 0.0 | 55.10% |
| 1997 | 877.4 | 0.0 | 0.0 | 0.0 | 43.04% |
| 1998 | 906.1 | 0.0 | 0.0 | 0.0 | 41.16% |
| 1999 | 938.8 | 0.0 | 0.0 | 0.0 | 39.48% |
| 2000 | 634.0 | 0.0 | 0.0 | 0.0 | 24.69% |
| 2001 | 633.9 | 0.0 | 0.0 | 0.0 | 22.86% |
| 2002 | 631.6 | 0.0 | 0.0 | 0.0 | 21.09% |
| 2003 | 643.2 | 0.0 | 0.0 | 0.0 | 19.88% |
| 2004 | 657.5 | 0.0 | 0.0 | 0.0 | 18.82% |
| 2005 | 673.2 | 0.0 | 0.0 | 0.0 | 17.84% |
| 2006 | 659.1 | 0.0 | 0.0 | 0.0 | 16.17% |
| 2007 | 642.1 | 0.0 | 0.0 | 0.0 | 14.59% |
| 2008 | 621.6 | 0.0 | 0.0 | 0.0 | 13.08% |
| 2009 | 600.1 | 0.0 | 0.0 | 0.0 | 11.69% |
| 2010 | 582.6 | 0.0 | 0.0 | 0.0 | 10.51% |
| 2011 | 564.1 | 0.0 | 0.0 | 0.0 | 9.42% |

* Scheduled Amounts include the Effects of Reschedulings in the Previous Years.

ZAMBIA DEBT SERVICE SUMMARY TABLE
(PERCENTAGES & MILLIONS OF SDR'S)

| YEAR | D SER:EXPORTS RATIO | | DS:EXP CAPACITY | EXCESS ABOVE CAPACITY | |
|----------------------------------|---------------------|----------|--------------------|-----------------------|----------|
| | SCHEDULED* | W/RELIEF | | SCHEDULED* | W/RELIEF |
| BASED ON IMF PROJECTIONS (02/86) | | | | | |
| 1985 | 93.20% | 93.20% | 25.00% | 68.20% | 68.20% |
| 1986 | 165.05% | 64.35% | 25.00% | 140.05% | 39.35% |
| 1987 | 113.69% | 113.69% | 25.00% | 88.69% | 88.69% |
| 1988 | 92.19% | 92.19% | 25.00% | 67.19% | 67.19% |
| 1989 | 82.96% | 82.96% | 25.00% | 57.96% | 57.96% |
| USAID PROJECTIONS: | | | | | |
| 1990 | 77.34% | 77.34% | 25.00% | 52.34% | 52.34% |
| 1991 | 67.68% | 67.68% | 25.00% | 42.68% | 42.68% |
| 1992 | 75.03% | 75.03% | 25.00% | 50.03% | 50.03% |
| 1993 | 70.74% | 70.74% | 25.00% | 45.74% | 45.74% |
| 1994 | 66.01% | 66.01% | 25.00% | 41.01% | 41.01% |
| 1995 | 58.85% | 58.85% | 25.00% | 33.85% | 33.85% |
| 1996 | 55.10% | 55.10% | 25.00% | 30.10% | 30.10% |
| 1997 | 43.04% | 43.04% | 25.00% | 18.04% | 18.04% |
| 1998 | 41.16% | 41.16% | 25.00% | 16.16% | 16.16% |
| 1999 | 39.48% | 39.48% | 25.00% | 14.48% | 14.48% |
| 2000 | 24.69% | 24.69% | 25.00% | 0.00% | 0.00% |
| 2001 | 22.86% | 22.86% | 25.00% | 0.00% | 0.00% |
| 2002 | 21.09% | 21.09% | 25.00% | 0.00% | 0.00% |
| 2003 | 19.88% | 19.88% | 25.00% | 0.00% | 0.00% |
| 2004 | 18.82% | 18.82% | 25.00% | 0.00% | 0.00% |
| 2005 | 17.84% | 17.84% | 25.00% | 0.00% | 0.00% |
| 2006 | 16.17% | 16.17% | 25.00% | 0.00% | 0.00% |
| 2007 | 14.59% | 14.59% | 25.00% | 0.00% | 0.00% |
| 2008 | 13.08% | 13.08% | 25.00% | 0.00% | 0.00% |
| 2009 | 11.69% | 11.69% | 25.00% | 0.00% | 0.00% |
| 2010 | 10.51% | 10.51% | 25.00% | 0.00% | 0.00% |
| 2011 | 9.42% | 9.42% | 25.00% | 0.00% | 0.00% |

* Scheduled Amounts include the Effects of Reschedulings
in the Previous Years.

ZAMBIA DEBT SERVICE BUDGETARY EFFECTS
(MILLIONS OF KWACHA AND SDR'S)

| YEAR | REVENUES AND GRANTS | KWACHA DEBT SERVICE: | | KDS:R&G | | EXCESS ABOVE CAPACITY | | |
|----------------------------------|---------------------------|----------------------|----------|------------|----------|-----------------------|------------|----------|
| | | SCHEDULED* | W/RELIEF | SCHEDULED* | W/RELIEF | CAPACITY KDS:R&G | SCHEDULED* | W/RELIEF |
| ===== | | | | | | | | |
| BASED ON IMF PROJECTIONS (02/86) | | | | | | | | |
| 1985 | 1,648.0 | 3,430.9 | 3,430.9 | 208.18% | 208.18% | 25.00% | 183.18% | 183.18% |
| 1986 | 3,591.0 | 9,982.0 | 3,892.0 | 277.97% | 108.38% | 25.00% | 252.97% | 83.38% |
| 1987 | 4,763.0 | 7,683.2 | 7,683.2 | 161.31% | 161.31% | 25.00% | 136.31% | 136.31% |
| 1988 | 5,144.0 | 6,633.2 | 6,633.2 | 128.95% | 128.95% | 25.00% | 103.95% | 103.95% |
| 1989 | 5,555.6 | 6,395.2 | 6,395.2 | 115.11% | 115.11% | 25.00% | 90.11% | 90.11% |
| | | | | | | | | |
| USAID PROJECTIONS: | | | | | | | | |
| 1990 | 6,000.0 | 6,438.9 | 6,438.9 | 107.32% | 107.32% | 25.00% | 82.32% | 82.32% |
| 1991 | 6,480.0 | 6,085.4 | 6,085.4 | 93.91% | 93.91% | 25.00% | 68.91% | 68.91% |
| 1992 | 6,998.4 | 7,286.6 | 7,286.6 | 104.12% | 104.12% | 25.00% | 79.12% | 79.12% |
| 1993 | 7,558.3 | 7,419.5 | 7,419.5 | 98.16% | 98.16% | 25.00% | 73.16% | 73.16% |
| 1994 | 8,162.9 | 7,477.5 | 7,477.5 | 91.60% | 91.60% | 25.00% | 66.60% | 66.60% |
| 1995 | 8,816.0 | 7,198.7 | 7,198.7 | 81.66% | 81.66% | 25.00% | 56.66% | 56.66% |
| 1996 | 9,521.3 | 7,279.1 | 7,279.1 | 76.45% | 76.45% | 25.00% | 51.45% | 51.45% |
| 1997 | 10,283.0 | 6,141.5 | 6,141.5 | 59.73% | 59.73% | 25.00% | 34.73% | 34.73% |
| 1998 | 11,105.6 | 6,342.9 | 6,342.9 | 57.11% | 57.11% | 25.00% | 32.11% | 32.11% |
| 1999 | 11,994.0 | 6,571.5 | 6,571.5 | 54.79% | 54.79% | 25.00% | 29.79% | 29.79% |
| 2000 | 12,953.6 | 4,438.0 | 4,438.0 | 34.26% | 34.26% | 25.00% | 9.26% | 9.26% |
| 2001 | 13,989.9 | 4,437.2 | 4,437.2 | 31.72% | 31.72% | 25.00% | 6.72% | 6.72% |
| 2002 | 15,109.0 | 4,421.3 | 4,421.3 | 29.26% | 29.26% | 25.00% | 4.26% | 4.26% |
| 2003 | 16,317.8 | 4,502.2 | 4,502.2 | 27.59% | 27.59% | 25.00% | 2.59% | 2.59% |
| 2004 | 17,623.2 | 4,602.7 | 4,602.7 | 26.12% | 26.12% | 25.00% | 1.12% | 1.12% |
| 2005 | 19,033.0 | 4,712.6 | 4,712.6 | 24.76% | 24.76% | 25.00% | 0.00% | 0.00% |
| 2006 | 20,555.7 | 4,613.4 | 4,613.4 | 22.44% | 22.44% | 25.00% | 0.00% | 0.00% |
| 2007 | 22,200.1 | 4,494.7 | 4,494.7 | 20.25% | 20.25% | 25.00% | 0.00% | 0.00% |
| 2008 | 23,976.1 | 4,351.5 | 4,351.5 | 18.15% | 18.15% | 25.00% | 0.00% | 0.00% |
| 2009 | 25,894.2 | 4,200.8 | 4,200.8 | 16.22% | 16.22% | 25.00% | 0.00% | 0.00% |
| 2010 | 27,965.8 | 4,078.3 | 4,078.3 | 14.58% | 14.58% | 25.00% | 0.00% | 0.00% |
| 2011 | 30,203.0 | 3,949.0 | 3,949.0 | 13.07% | 13.07% | 25.00% | 0.00% | 0.00% |

* Scheduled Amounts include the Effects of Reschedulings in the Previous Years.

ZAMBIA IMPLIED ARREARS ACCUMULATION
(SDRs MILLIONS)

| YEAR | IMPLIED FX ARREARS ANNUAL ADDITIONS | | IMPLIED FX ARREARS ACCUMULATED | | IMPLIED BUD ARREARS ANNUAL ADDITIONS | | IMPLIED BUD ARREARS ACCUMULATED | |
|----------------------------------|-------------------------------------|----------|--------------------------------|----------|--------------------------------------|----------|---------------------------------|----------|
| | SCHEDULED* | W/RELIEF | SCHEDULED* | W/RELIEF | SCHEDULED* | W/RELIEF | SCHEDULED* | W/RELIEF |
| BASED ON IMF PROJECTIONS (02/86) | | | | | | | | |
| 1985 | 611.8 | 611.8 | 611.8 | 611.8 | 431.3 | 431.3 | 431.3 | 431.3 |
| 1986 | 1,210.0 | 340.0 | 1,821.8 | 951.8 | 1,297.8 | 427.8 | 1,729.0 | 859.0 |
| 1987 | 856.2 | 856.2 | 2,678.0 | 1,808.0 | 927.5 | 927.5 | 2,656.5 | 1,786.5 |
| 1988 | 690.6 | 690.6 | 3,368.6 | 2,498.6 | 763.9 | 763.9 | 3,420.4 | 2,550.4 |
| 1989 | 638.3 | 638.3 | 4,006.9 | 3,136.9 | 715.2 | 715.2 | 4,135.6 | 3,265.6 |
| USAID PROJECTIONS: | | | | | | | | |
| 1990 | 622.5 | 622.5 | 4,629.4 | 3,759.4 | 705.6 | 705.6 | 4,841.1 | 3,971.1 |
| 1991 | 548.2 | 548.2 | 5,177.6 | 4,307.6 | 637.9 | 637.9 | 5,479.1 | 4,609.1 |
| 1992 | 694.1 | 694.1 | 5,871.7 | 5,001.7 | 791.0 | 791.0 | 6,270.1 | 5,400.1 |
| 1993 | 685.4 | 685.4 | 6,557.1 | 5,687.1 | 790.0 | 790.0 | 7,060.1 | 6,190.1 |
| 1994 | 663.7 | 663.7 | 7,220.8 | 6,350.8 | 776.7 | 776.7 | 7,836.7 | 6,966.7 |
| 1995 | 591.5 | 591.5 | 7,812.2 | 6,942.2 | 713.5 | 713.5 | 8,550.3 | 7,680.3 |
| 1996 | 568.0 | 568.0 | 8,380.3 | 7,510.3 | 699.8 | 699.8 | 9,250.1 | 8,380.1 |
| 1997 | 367.8 | 367.8 | 8,748.0 | 7,878.0 | 510.1 | 510.1 | 9,760.2 | 8,890.2 |
| 1998 | 355.8 | 355.8 | 9,103.8 | 8,233.8 | 509.5 | 509.5 | 10,269.7 | 9,399.7 |
| 1999 | 344.4 | 344.4 | 9,448.2 | 8,578.2 | 510.4 | 510.4 | 10,780.1 | 9,910.1 |
| 2000 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 171.4 | 171.4 | 10,951.5 | 10,081.5 |
| 2001 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 134.2 | 134.2 | 11,085.7 | 10,215.7 |
| 2002 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 92.0 | 92.0 | 11,177.7 | 10,307.7 |
| 2003 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 60.4 | 60.4 | 11,238.1 | 10,368.1 |
| 2004 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 28.1 | 28.1 | 11,266.3 | 10,396.3 |
| 2005 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 0.0 | 0.0 | 11,266.3 | 10,396.3 |
| 2006 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 0.0 | 0.0 | 11,266.3 | 10,396.3 |
| 2007 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 0.0 | 0.0 | 11,266.3 | 10,396.3 |
| 2008 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 0.0 | 0.0 | 11,266.3 | 10,396.3 |
| 2009 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 0.0 | 0.0 | 11,266.3 | 10,396.3 |
| 2010 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 0.0 | 0.0 | 11,266.3 | 10,396.3 |
| 2011 | 0.0 | 0.0 | 9,448.2 | 8,578.2 | 0.0 | 0.0 | 11,266.3 | 10,396.3 |

* Scheduled Amounts include the Effects of Reschedulings in the Previous Years.

ZAMBIA BALANCE OF PAYMENTS AND RESOURCE GAP FOR GROWTH
(MILLIONS OF SDR'S)

| YEAR | EXPORTS | | IMPORTS | | IMF PURCH | CAPITAL INFLW | OVERALL BALANCE, SCHEDULED* DEBT | | OVERALL BALANCE SCHEDULED* W/RELIEF | NECES FOR 2.0% PER CAPITA GROWTH SCHEDULED* W/RELIEF | RESOURCE GAP FOR GROWTH |
|----------------------------------|---------|------------------|-----------|-----------------|-----------|---------------|----------------------------------|---------|-------------------------------------|--|-------------------------|
| | G & S | G&S, No INTEREST | TRANSFERS | NO DEBT SERVICE | | | NO DEBT SERVICE | NA | | | |
| 1985 | 897.0 | 931.0 | 21.0 | 0.0 | 0.0 | 255.0 | 242.0 | 836.0 | (594.0) | (594.0) | NA |
| 1986 | 864.0 | 910.0 | 30.0 | 178.0 | 0.0 | 336.0 | 498.0 | 1,426.0 | (928.0) | (58.0) | 948.8 |
| 1987 | 965.4 | 994.0 | 32.0 | 120.0 | 0.0 | 389.0 | 512.4 | 1,097.6 | (585.2) | (585.2) | 607.1 |
| 1988 | 1,027.9 | 1,043.0 | 33.0 | 0.0 | 0.0 | 282.0 | 299.9 | 947.6 | (647.7) | (647.7) | 670.8 |
| 1989 | 1,101.3 | 1,096.0 | 35.0 | 0.0 | 0.0 | 289.0 | 329.3 | 913.6 | (584.3) | (584.3) | 608.7 |
| BASED ON IMF PROJECTIONS (02/86) | | | | | | | | | | | |
| USAID PROJECTIONS: | | | | | | | | | | | |
| 1990 | 1,189.4 | 1,164.0 | 36.4 | 0.0 | 0.0 | 314.1 | 375.9 | 919.8 | (544.0) | (544.0) | 569.7 |
| 1991 | 1,284.5 | 1,236.1 | 37.9 | 0.0 | 0.0 | 314.1 | 400.3 | 869.3 | (469.0) | (469.0) | 496.2 |
| 1992 | 1,387.3 | 1,312.8 | 39.4 | 0.0 | 0.0 | 347.7 | 461.6 | 1,040.9 | (579.4) | (579.4) | 608.1 |
| 1993 | 1,498.3 | 1,394.1 | 40.9 | 0.0 | 0.0 | 386.6 | 531.6 | 1,059.9 | (528.3) | (528.3) | 558.6 |
| 1994 | 1,618.1 | 1,480.6 | 42.6 | 0.0 | 0.0 | 414.8 | 594.9 | 1,068.2 | (473.3) | (473.3) | 505.2 |
| 1995 | 1,747.6 | 1,572.4 | 44.3 | 0.0 | 0.0 | 394.9 | 614.4 | 1,028.4 | (414.0) | (414.0) | 447.7 |
| 1996 | 1,887.4 | 1,669.9 | 46.1 | 0.0 | 0.0 | 426.3 | 689.9 | 1,039.9 | (350.0) | (350.0) | 385.6 |
| 1997 | 2,038.4 | 1,773.4 | 47.9 | 0.0 | 0.0 | 457.7 | 770.6 | 877.4 | (106.8) | (106.8) | 144.3 |
| 1998 | 2,201.5 | 1,883.4 | 49.8 | 0.0 | 0.0 | 492.4 | 860.4 | 906.1 | (45.8) | (45.8) | 85.3 |
| 1999 | 2,377.6 | 2,000.1 | 51.8 | 0.0 | 0.0 | 531.1 | 960.4 | 938.8 | 21.6 | 21.6 | 20.1 |
| 2000 | 2,567.8 | 2,124.1 | 53.9 | 0.0 | 0.0 | 232.3 | 729.9 | 634.0 | 95.9 | 95.9 | 0.0 |
| 2001 | 2,773.2 | 2,255.8 | 56.0 | 0.0 | 0.0 | 238.2 | 811.6 | 633.9 | 177.7 | 177.7 | 0.0 |
| 2002 | 2,995.1 | 2,395.7 | 58.3 | 0.0 | 0.0 | 241.9 | 899.6 | 631.6 | 268.0 | 268.0 | 0.0 |
| 2003 | 3,234.7 | 2,544.2 | 60.6 | 0.0 | 0.0 | 259.5 | 1,010.6 | 643.2 | 367.4 | 367.4 | 0.0 |
| 2004 | 3,493.5 | 2,702.0 | 63.0 | 0.0 | 0.0 | 279.8 | 1,134.4 | 657.5 | 476.8 | 476.8 | 0.0 |
| 2005 | 3,772.9 | 2,869.5 | 65.6 | 0.0 | 0.0 | 301.5 | 1,270.5 | 673.2 | 597.3 | 597.3 | 0.0 |
| 2006 | 4,074.8 | 3,047.4 | 68.2 | 0.0 | 0.0 | 293.4 | 1,388.9 | 659.1 | 729.9 | 729.9 | 0.0 |
| 2007 | 4,400.7 | 3,236.3 | 70.9 | 0.0 | 0.0 | 282.4 | 1,517.7 | 642.1 | 875.6 | 875.6 | 0.0 |
| 2008 | 4,752.8 | 3,437.0 | 73.7 | 0.0 | 0.0 | 268.0 | 1,657.5 | 621.6 | 1,035.9 | 1,035.9 | 0.0 |
| 2009 | 5,133.0 | 3,650.1 | 76.7 | 0.0 | 0.0 | 252.4 | 1,812.1 | 600.1 | 1,212.0 | 1,212.0 | 0.0 |
| 2010 | 5,543.7 | 3,876.4 | 79.8 | 0.0 | 0.0 | 240.9 | 1,988.0 | 582.6 | 1,405.4 | 1,405.4 | 0.0 |
| 2011 | 5,987.2 | 4,116.7 | 82.9 | 0.0 | 0.0 | 228.4 | 2,181.9 | 564.1 | 1,617.7 | 1,617.7 | 0.0 |

* Scheduled Amounts include the Effects of Reschedulings in the Previous Years.

ZAMBIA DEBT INFORMATION
ANNUAL AVERAGES

| ITEM | 1987-93 | 1994-2000 |
|--------------------------------|----------|-----------|
| | W/RELIEF | W/RELIEF |
| DEBT SERVICE | 978.4 | 927.5 |
| DS:EXP | 81.01% | 44.97% |
| IMPLIED FX ARREARS | 676.5 | 413.0 |
| ACCUM ARREARS END OF PERIOD | 4,735.3 | 7,626.4 |
| KW DEBT SERVICE | 6,848.9 | 6,492.7 |
| KDS:R&G | 112.81% | 62.40% |
| IMPLIED BUDGET ARRS | 761.6 | 555.9 |
| ACCUM ARREARS END OF PERIOD | 5,331.0 | 9,222.5 |
| OVERALL BAL, W/O DS | 415.9 | 745.8 |
| OVERALL BAL, W/ DS | (562.5) | (181.8) |
| GROWTH REQUIREMENTS | 25.9 | 37.7 |
| RESOURCE GAP W/O DS | 0.0 | 0.0 |
| RESOURCE GAP W/ DS | 588.5 | 226.9 |

APPENDIX IV

EXPLANATION OF BASIC CALCULATIONS FOR DEBT RESCHEDULING

First Table: Zambia Base Debt Service Projections

Debt Out = Debt Outstanding at the end of the year. Value for 1985 is taken from the IMF's February, 1986 report; includes arrears. The remaining values are calculated by subtracting current year principal payments from the previous years debt outstanding and adding new borrowing.

New Borrow = New Borrowing. For 1986 through 1989, calculated from the scheduled principal payments and IMF forecasts of the balance of payments capital account balance. For subsequent years, calculated from scheduled principal payments and an assumed SDR 75 million deficit on the capital account.

Debt Service Payments:

Principal. For 1985-1989, taken from the IMF report. Subsequent years are based on: 1) payments to pay-off the remaining debt outstanding at the end of 1985 by the year 2000; and 2) payments on the New Borrowing which has terms of 5 year grace period, then 15 years for repayment.

IMF Repurchases. For 1985-1989, taken from the IMF report and incorporating new purchases over the period. Remaining years based on the repayment of new IMF Purchases. Repurchases begin the year following the purchase and are paid back in four years.

Interest. For 1985-1989, taken from the IMF report with additions for new borrowing. Subsequent years calculated from the interest rate given for Existing and New Debt on the assumptions sheet applied to the Debt Outstanding at the end of the previous year.

On Rescheduled Service:

Principal: Payments based on rescheduled amounts in the model. Terms are five years grace, then a five year repayment period.

Interest: Payments based on rescheduled amounts in the model. Beginning in the year following the rescheduling, the interest rate for Rescheduled Debt on the assumptions sheet is applied to the outstanding balance of rescheduled debt service.

In the version of the model which incorporates service payments on new arrears, interest and principal payments are shown for the new arrears accumulations.

Interest is calculated using the interest rate on Existing and New Debt.

Principal payments are based on a ten (10) year repayment period.

TOTAL = Sum of the above Items.

Exports of Goods and Services. For 1985-1989, taken from revised IMF estimates. For subsequent years, they grow at the rate given on the assumptions sheet.

Debt Service: Exports = Debt Service Ratio. Total Debt Service as a percent of Exports of Goods and Services.

Second Table: Zambia Effects of Rescheduling

Original Service = Total Debt Service from the First Table.

Forgiven Debt Service. Calculated by applying the Percent of Debt Service Forgiven from the assumptions sheet to the year's original service.

Potential Debt Resch = Potential Debt Rescheduled. For 1986 reflects the actual rescheduling granted or to be granted. For the remaining years, calculated by applying the various percentages given under section II of the assumptions sheet to the non-forgiven debt service for the given year.

DS:EXP W/Relief = Debt Service Ratio after Rescheduling.

Third Table: Zambia Debt Service Summary Table

D SER:EXPORTS RATIO. Transferring the Debt Service Ratios from the first and second tables.

DS:EXP CAPACITY. The value given on the assumptions sheet for what percent of export receipts Zambia can reasonably be expected to pay as debt service.

Excess Above Capacity. The difference between the actual debt service ratios (first two columns) and the capacity ratio.

Implied Arrears. Calculated by multiplying the excess service ratio and exports. The logic is that if the country can only be expected to pay the amount indicated by the capacity ratio, then the balance will accrue as arrears.

Fourth Table: Zambia Debt Service Budgetary Effects

Revenues and Grants. For 1985-1989, taken from the IMF budget tables. For subsequent years, calculated by applying the growth rate given in the assumptions sheet to the previous years value.

Kwacha Debt Service. Equals the debt service calculated in the previous tables times the exchange rate given in the assumptions sheet.

KDS:R&G = Kwacha Debt Service Ratio. Kwacha Debt Service as a percent of Revenues and Grants. Conceptually, this ratio plays the same role as the debt service to exports ratio, except it is measuring the effects of debt service on the domestic budget.

Capacity KDS:R&G, Excess Above Capacity and Implied Arrears. Analogous to the corresponding items in the third table, except these apply to the domestic budget rather than the balance of payments.

Fifth Table: Zambia Balance of Payments and Resource Gap for Growth.

Exports, Imports, Transfers. For 1985-1989, taken from the revised IMF estimates for the balance of payments. For subsequent years, calculated by applying the growth rates given in the assumptions sheet to the previous year's value.

IMF Purch = IMF Purchases. For 1985-1987, amounts as scheduled under the IMF program. For subsequent years when rescheduling is to occur, assumed equal to IMF Repurchases.

Capital Inflow = New Borrowing from the first Table.

Overall Balance, No Debt Service. What the balance of payments overall balance would be if there were no debt service obligations. Calculated by summing Exports, Transfers, IMF Purchases, and Capital Inflow then subtracting Imports.

Scheduled Debt Service. Taken from the first table.

Overall Balance. The overall balance for the balance of payments including debt service and debt relief.

Neces for $x.x\%$ Per Capita Growth= Resources Required for the economy to grow at $x.x\%$ on a per capita basis. The overall balance that would be necessary to finance a per capita income growth rate of $x.x\%$, given the capital-output ratio, population growth rate, and the domestic savings rate given in the assumptions sheet.

Resource Gap For Growth. The difference between the Necessary resources for the given growth rate and the overall balance. This amount represents the additional foreign exchange resources (exports, foreign assistance, borrowing, etc.) that Zambia would need to achieve the $x.x\%$ per capita income growth. An alternate interpretation would be the debt arrears that would accumulate if Zambia wanted to have the necessary resources to reach the targeted per capita growth rate.

Sixth Table: Zambia Debt Information, Annual Averages

This table simply presents the annual average values for the items listed for the periods 1987-1993 and 1994-2000 for the debt relief assumptions made on the assumptions sheet. The scheduled amounts with no rescheduling after 1986 are generated with a modified version of the model.