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## Simulating the effects of debt relief in Zambia

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Discussion Paper No. 2001/118

## **Simulating the Effects of Debt Relief in Zambia**

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October 2001

### **Abstract**

The HIPC initiative for debt relief in the poorest countries has been extended to cover more countries. Zambia is one of the countries accepted under the enhanced initiative for a debt relief of US\$ 3.8 billion. In this paper, the possible effects of this debt relief are analysed using a social accounting matrix as a tool of analysis. Two alternative approaches were chosen: income transfers, and direct production support in the amount of the annual decrease in the debt service. Experiments show how debt service relief can contribute to national growth targets. They also show the different effects on household income, resulting from the alternative expenditure patterns. Income transfer scenario creates greater increase in the household income, at the expense of production value.

Keywords: HIPC initiative, debt, poverty, Zambia

JEL classification: O11, F34, O55

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## **1 Introduction**

Debt and debt service tend to create a vicious circle for a poor country. The accumulation of debt creates additional demand for credit to repay some of the existing debt, only to lead to more debt service problems. The problems are discounted into the interest rates of new loans, which makes additional debt even more expensive. Examples have been many, and there has been an observable decline in the loans provided by the commercial banks over the last 20 years. Loans have been provided mainly via multilateral and bilateral aid organizations.

Over the years, it has become apparent that the poorest and most indebted countries cannot service their debt and maintain a reasonable level of domestic expenditure conditions at the same time on social sectors and other areas where there is need to improve the living. Worsening budgetary situation has often lead to applying a cash budget, which has meant that little has been left to spend on other sectors after the payments of wages and foreign debt service. In order to rescue countries from these circumstances, the International Community has been forced to take actions beyond the traditional means. This meant the launching of the HIPC initiative, a joint action taken by the World Bank and the IMF.

These efforts are only at their initial stages, so arriving to any binding conclusions at this stage may be far too early. In the end, what really matters are the actions that are taken in the absence of the debt. Some of the criticism on the HIPC initiative has been placed on the fact that the arrangements leads to new opportunities to start debt accumulation, instead of the 'fresh start' it would otherwise create.

In this study, the impact of the debt relief on the Zambian economy as a case study on the possible progress achieved as a consequence of the HIPC initiative. Zambia is a country with vast unfulfilled economic potential. Between its independence in 1964 and mid-1970s the country was prosperous with revenues from copper exports. Some 25 years later, the country is among the poorest countries in the world, eligible to qualify under the HIPC initiative of the World Bank and the IMF. What has taken place is a major economic downturn that has come to the point, where domestic resources and traditional forms of budgetary support have become inadequate.

This paper is organized as follows. In section 2, the economic and political developments in Zambia are reviewed to give an outline of the factors that have led to Zambia's worsening debt situation. In addition, the problem of increasing poverty over the years is addressed in the second part of the section. The consequences of these events are then shown in section 3, where the debt problems of Zambia are discussed, as well as the concept of HIPC applied to the Zambian context. In section 4, the impact of the HIPC initiative on Zambia is analysed using a social accounting matrix to assess the economy-wide impacts of the debt relief. This has been done using two scenarios of alternative expenditure patterns of the funds released from the debt service. Finally, section 5 provides some conclusions and directions for future research.

## **2 Economics, politics and poverty in Zambia**

### **2.1 The main economic and political events, 1964-2000**

The main changes in the Zambian economic and political climate have been documented in many reports and studies (Andersson et al. 2000, McCulloch et al. 2001, Rakner et al. 2001 among the most recent ones). In this paper, the history is not reviewed in great detail. Selected economic and political events and trends are documented here to give the reader not previously familiar with the economy, an overview of the broader context in which the debt accumulation has taken place. A chronological account of the main events is provided in Appendix 1.

After gaining independence in 1964, Zambia was considered as one of the most prosperous countries of sub-Saharan Africa. Due to the vast natural resources, it seemed that the country would provide an example for the rest of the region in terms of economic growth. More or less, the policies carried out until mid-1970s did focus on the copper industry, creating a somewhat unbalanced growth between the sectors. This was reflected among other things in the infrastructure: most of the services provided were planned to support the mining industry. Still today, the infrastructure in Zambia is not covering all of the nation on an equal basis and the maintenance and construction is mainly carried out by foreign aid.

The changes in the 1970s took place in various forms. Oil prices increased in 1973 and 1974 threefold, with the international market prices for copper falling at the same time. The second oil crisis in 1979 and 1980 led to another sharp decline in the relative prices of copper and petroleum. As a consequence, the trade balance turned negative. Treating the crisis only as temporary, the government of Zambia did not properly respond to the changes in economic situation. The government continued to run a budget deficit, resulting from the 1975 unexpected low revenues with respect to increases in imports. The financing of deficit took place through the banking system and the rising import prices, due to import licensing, all contributed to rising inflation rates (Andersson et al. 2000).

The situation did not improve after the second oil shock. Andersson et al. (2000) refer to the 1980s as a lost decade. They list three policy reorientations of utmost importance. First, the government sought to regain the political initiative, after failing to preserve it under the IMF-supported action programme. Second, the continued economic downturn forced the government to follow strict structural adjustment programme instead of policy experiments on more liberal terms. Third, the economic conditions varied to such an extent over the years that in 1987 the government withdrew from implementing the IMF programme.

During the 1990s the economic events were overtaken by major changes in the political events. Following the opposition overtaking Kaunda and UNIP party in the 1991 elections, it was expected that a major shift in the policies would take place (Rakner et al. 2001). In fact, major changes in the economic policy took place. A structural adjustment programme was started in 1991, with focus on privatization, liberalization of trade and exchange markets, introduction of a cash budget, reforms on health and education sectors, reforming of the public sector, increasing the productivity of the agricultural sector and improving the infrastructure (Carlsson et al. 2000).

The effects of the structural adjustment since have been various. Most alarming is that the status of the poor in Zambia has not improved, more likely it has worsened. The economy has been in constant change: in 1996 the economy grew by 6.6 per cent, only to experience a downturn in 1997 and a negative growth rate in 1998. The problems of the economy have shown especially in the budgeting: aid flows have not been disbursed according to the expected schedule and the domestic revenue collection has been short of the expected levels.

The official estimates of the economic development in the future are positive. The real GDP is expected to grow at the rate of 5.0 per cent over the next years. Some of the macroeconomic indicators and projections of their future development are reported in Table 1. More macroeconomic assumptions regarding the future developments are reported in Appendix 2.

As a summary, the economy of Zambia has had many opportunities that were never exploited. Economical situation was often worsened by national policies, which at first failed to notice the changes in global economic trends and then could not fully implement the required economic reforms. All these took place over a quarter of a century ago, leading to an overall poor nation-wide performance in politics, economy, social sectors and poverty alleviation.

Table 1  
Macroeconomic indicators, 1999-2002 (IMF 2000b)

	1999*	2000**	2001**	2002**
Real GDP growth (%)	2.4	4.0	5.0	5.0
Inflation, end period (%)	20.6	19.0	10.0	7.0
Growth in broad money (%)	29.2	25.2	15.5	12.4
Domestic budget balance as % of GDP	0.4	-2.3	-1.0	0.2
Overall fiscal balance (excl. grants) as % of GDP	-11.9	-13.6	-14.0	-11.8
External grants as % of GDP	7.9	8.0	4.9	4.7
External current account deficit, excl. grants, as % of GDP	-15.8	-13.6	-13.3	-12.8

\* = Estimated

\*\* = Projected

Finally, the next section takes a look into the poverty in Zambia. The effects of the macro-economic policies have been considered to cause negative income effects on the poor. In Zambia, the poverty has become a stable part of the society, which makes it important to tackle it properly.

## 2.2 Poverty in Zambia

One of the areas in which the debt relief is considered to improve the conditions in Zambia is the poverty, as the funds that become available from the current debt service will be allocated to poverty relief programme. Zambia is among the poorest countries in the world. Household surveys and poverty assessments conclude that a share of population between 70 and 80 per cent spend less than the national poverty line. The value of Gini coefficient was 0.53 in 1998, indicating that there is very much inequality in the society (IMF 2000a). Poverty trends are given in Table 2.

Zambia is one of the most urbanized countries in Southern Africa and urban poverty has been increased over time. This has been due to a depressed manufacturing sector. Most of the urban poor live in small settlements with limited access to services, and their income is mostly derived from informal sector activities. Rural poverty, in its turn, is more associated with geographic isolation. Less than 25 per cent of the rural population have access to safe water, and 20 per cent live more than 20 km from any public transport facility. Poverty is also gender-biased, female-headed households are more likely to be among the poor. Government efforts to reduce poverty have focused on improving basic health care, nutrition and education through sector investment programmes<sup>1</sup> supported by groups of development partners, and maintaining or increasing public expenditures directed to social sectors (IMF 2000a).

Table 2  
Poverty trends in Zambia, per cent (IMF 2000a)

	1991	1993	1996	1998
National incidence	69.7	73.8	69.2	72.9
Incidence of extreme poverty	62.2	60.6	53.2	57.9
Rural poor, % of rural population	88.0	92.2	82.2	83.1
Urban poor	48.6	44.9	46.0	56.0
Income distribution (Gini coefficients)	0.59	0.51	0.50	0.53

<sup>1</sup> Despite efforts to create coherent sector framework for education and agriculture, the efforts have been modest. The programmes have progressed slowly, mostly due to insufficient implementation capacity, overlapping public sector reforms and continuous policy dialogue. More discussion of the problems can be found in Gould et al. 1998 and Nokkala 2001.

Alwang et al. (1996) studied the guidelines for poverty reduction in rural Zambia. First of all, historically there is evidence that past policies and the structural adjustments programmes have contributed to increasing poverty in the rural areas. Second, they find that the poorest are the ones with remote transport and other infrastructure facilities, indicating that there is need to create local markets and improve access to other services as well. Improvements in the labour markets are also required, as well as in the credit markets. Finally, the study utilized positive and normative approaches using poverty profiles and household models to draw conclusions. In this study, a social accounting matrix is used to study the production and institutional aspects of debt relief.

The means of addressing the poverty will be revisited in section 4, where the scope of the current poverty relief programme is discussed in more detail. Data from the programme structure will be used to construct the scenarios of the impact of debt relief on the Zambian economy.

### 3 Zambia and debt

#### 3.1 Past developments in the debt accumulation

Zambia has been receiving financial aid since its independence. Following the policy choices and investments in the mid-1970s, Zambia started to accumulate foreign debt. The change in the world market price for copper was considered only a short-term shock, so the government financed domestic expenditures through borrowing.

In Table 3, capital flows to and from Zambia between 1970 and 1984 are shown. As can be seen, the share of medium- and long-term loans of total inflows grew from 32 per cent in the 1970-74 period to 92 per cent in the 1983-84 period. Over the years, the total inflow has grown but at the same time the share of loans has also risen, contributing to most of the growth.

Table 3  
Capital flows to and from Zambia, 1970-1984 (millions of Kwacha, averages)  
(Andersson et al. 2000)

	Average 1970-74	Average 1975-79	Average 1980-82	Average 1983-84
Total inflow	45	115	295	130
Of which medium- and long-term loans	32%	48%	77%	92%
Factor incomes paid abroad	110	140	240	330
Of which:				
Investment income	64%	66%	81%	89%
Net capital inflow	-61	-24	45	-200

Note: total inflow consists of private investments, grants, and long- and medium-term government borrowing.



Second major increase in the aid was experienced in 1991 and onwards, following the change in political leadership. A total of nine policy based loans, provided by multilateral institutions, were run between 1991 and 1999. Of the loans, seven were provided by the World Bank and two provided by the IMF. Performance criteria included a vast range of policies, ranging from introduction of the VAT to civil service reforms and from privatization of the ZCCM to liberalizing foreign trade (Rakner et al. 2001).

Zambia has become aid dependent. In 1992, Zambia received US\$ 125 per capita in aid; a level exceeding the sub-Saharan Africa average 3.2 times. The aid dependency of Zambia is shown in Table 4. The data shows how important the aid has been for the economy as a whole, also from the perspective of the region as a whole.

The accumulation of debt led to considerable increase in the debt stock over the last two decades. Some of the recent developments and the breakdown of the existing debt is given in Table 5.

The debt service in Zambia has grown over the years. In Table 6, a summary of the debt service paid and external flows of the economy in the 1990s is provided. There has been a considerable variation in the amount of debt service paid over the past decade, ranging from the US\$ 136 million in 1999 to US\$ 1,584 million in 1995. Similarly, the ratio of debt service as a percentage of exports has varied considerably. In terms of the GDP, the debt service in 1995 accounted for over 45 per cent of the GDP, a level almost impossible to reach under normal conditions. The debt stock has remained unsustainable, although the debt service ratio has improved.

As a summary, the debt accumulation has continued in a rather uncontrolled manner in Zambia. Reasons for this have been various, leading to a situation where the resulting debt has been beyond the government control. In a situation like this, qualifying for the enhanced HIPC initiative may well have been the only way out of the debt trap for Zambia.

Table 4  
Aid dependency of Zambia, a comparison of 1992 and 1997 (Carlsson et al. 2000)

	Aid as % of GNP		Aid as % of gross domestic investment		Aid as % of imports		Aid as % of government expenditure	
	1992	1997	1992	1997	1992	1997	1992	1997
Zambia	36.1	16.9	273.8	107.4	53.8	35.3	104.2	n.a.
SSA	12.0	5.0	66.1	27.7	27.9	12.7	n.a.	n.a.

Table 5  
The external debt of Zambia, 1995-98 (Carlsson et al. 2000)

Composition of debt, US\$ million	1995	1996	1997	1998
<i>Public debt</i>	6,042	6,124	6,315	6,214
Bilateral	2,605	2,677	2,856	2,695
Paris Club	2,153	2,246	2,427	2,212
Non-Paris Club	452	431	429	482
Multilateral	3,201	3,269	3,315	3,112
IMF	1,206	1,206	1,206	1,139
IDA	1,238	1,348	1,450	1,526
IBRD	75	54	33	16
Commercial debt	236	178	144	407
<i>Private debt</i>	57	82	88	254
<b>Total debt stock</b>	<b>6,099</b>	<b>6,206</b>	<b>6,402</b>	<b>6,468</b>
<i>Indicators, %</i>				
Debt service ratio	-	40.7	28.8	33.3
Debt/export ratio	515	625	538	741
Debt/GDP ratio	179	191	164	205

Table 6  
Debt service paid and external flows 1992-99 (IMF 2000b)

	1992	1993	1994	1995	1996	1997	1998	1999
Debt service paid, US\$ million	354	326	409	1,584	319	217	147	136
Debt service paid as % of exports of goods and non-factor services	29.6	31.2	34.8	120.4	28.7	17.6	16.0	16.2
Debt service paid as % of GDP	10.7	10.0	12.2	45.7	9.7	5.6	4.6	4.3
Debt service paid as % of government revenue	58.3	63.2	60.9	230.2	47.1	27.9	24.4	24.5
Gross external inflows	1,106	795	550	1,816	510	401	297	511
Net external inflows	752	469	141	232	191	184	150	375

### **3.2 The HIPC initiative: general**

The HIPC initiative was developed by the World Bank and the IMF as a joint effort to fight the increasing debt problems in developing countries. The programme was launched in 1996. In 1999, the International Community agreed to broaden the scope of the programme by increasing the number of eligible countries, raising the amount of debt relief for eligible countries and speeding up the delivery of the initiative. This so called enhanced initiative aims to bring the level of debt a maximum of 150 per cent of the exports and 250 per cent of the government revenue (World Bank 2001a).

There is conditionality involved in the HIPC approval process. Eligible countries qualify for the initiative in two stages. In the first stage, the country needs to demonstrate capacity to use the assistance granted by establishing a track record, normally of three years. The track record is built under programmes supported by IMF and IDA. After reaching the decision point under the initiative, the country is to implement a full-fledged poverty reduction strategy. The planning of the strategy should be done with a broad participation of civil society, and an agreed set of measures aimed at promoting economic growth.

By 2001, 13 countries have reached the decision point. Zambia joined Benin, Bolivia, Burkina Faso, Cameroon, Guyana, Honduras, Mali, Mauritania, Mozambique, Senegal, Tanzania and Uganda as it qualified for the HIPC initiative. Total committed assistance is estimated around US\$ 23 billion, which represents an average of more than 45 per cent of NPV stock-of-debt reduction. In addition, some 20 other countries were under consideration for the enhanced HIPC initiative by the end of the year (World Bank 2001a). With these countries included, at the moment the number of countries under the decision point of the initiative is 23. Additional countries have been African, with the exception of Nicaragua (World Bank 2001b).

Next year will be an important time period for the assessment of the current progress under the initiatives. More countries have been accepted to join the initiative, and some of the countries moving towards the completion point. The current practices favour a relatively fast move to decision point for the remaining countries subject to consideration under the initiative. To date, Uganda and Bolivia have already reached their completion point by delivering their poverty reduction strategy papers. Zambia is among the next group to follow the procedure.

### **3.3 The Zambia HIPC initiative**

HIPC initiative in Zambia is carried out as a part of the enhanced initiative. The decision was confirmed in December 2000 after extensive economic analysis conducted by the multilateral donors. Both IDA and IMF approved their part of the initiative, which is the biggest share of the total initiative. In Table 7, the proportional burden sharing approach is broken down by the type of creditor. The Table shows that the total reduction factor is high, 62.6 per cent. The breakdown is also very illustrative of the current debt situation overall: most of the debt is either multilateral or bilateral, only an insignificant portion is with commercial banks.

Table 7  
Assistance levels under a proportional burden sharing approach, US\$ 1999 NPV terms  
(IMF 2000b)

	Total	Multilaterals	Bilaterals	Commercial banks	Common reduction factor, %
NPV of debt-to-exports ratio	150				
Debt relief under baseline scenario	2,499	1,331	1,145	23	62.6
NPV of debt at the end of 1999	3,991	2,126	1,828	37	
Three-year export average	994				
NPV of debt-to-export ratio, %	401				
Paris Club creditors	1,739				

For the purposes of illustrating debt sustainability after assistance under the initiative, the IMF and IDA staff created assumptions (IMF 2000a):

- IDA provides assistance by reducing Zambia's debt service by 83 per cent each year from the decision point over a period of 20 years.
- The IMF improves all HIPC assistance over a period of 5 years, with interim assistance of 20 per cent annually up to 3 years.
- Other multilateral creditors will provide assistance by reducing Zambia's debt service by a factor between 65 per cent and 78 per cent each year.
- Paris Club creditors will also grant a rescheduling.

Under these assumptions, the external debt will be reduced substantially. The assistance will reduce the debt of Zambia to 150 per cent of the exports in net present value (NPV) terms. The level of debt will increase over this level through 2002 but will decline after that. Stock of debt will reach as high as 170 per cent of exports in 2000-01 period and remain at the level of over 250 per cent of the government revenue until 2005. From 2006 onwards, the debt situation is expected to improve significantly, with decreasing debt-to-revenue and debt-to-GDP ratios (IMF 2000a).

The IMF and IDA have also created projections of future economic development in Zambia up to the year 2020. Some data from these projections is given in Appendix 2. According to the data, as a consequence of the debt relief and other economic activity Zambia should experience a continuous growing trend in the GDP. Part of achieving these goals is to be able to meet the demand to increase the GDP according to the

planned development. Whether this can be achieved through the HIPC initiative will be of interest in the following policy experiments.

In the next section, the data from the national poverty reduction strategy is used to simulate the alternative ways to carry out the poverty reduction implied by the debt service reduction.

## **4 Effect of the HIPC initiative**

### **4.1 The approach<sup>2</sup>**

Since the aim of this paper is to provide a comprehensive assessment of the effects of the HIPC initiative on the Zambian economy, this paper utilizes the social accounting matrix (SAM) for multi-sector analysis. The social accounting matrix for Zambia is based on a financial SAM for Zambia, originally constructed by Adam and Bevan (1998) at Oxford University. SAMs or Computable General Equilibrium Models (CGEs) can be used for economy-wide assessment of external policy changes, particularly because of their ability to capture the circular flows of the economy. This is a feature that is useful, especially since the impacts of the debt relief can be seen at the household level. In this study, a SAM for Zambia is used for the policy experiments. Similar exercises have been carried out in Khan (1999) for South Africa and poverty and Rich et al. (1997) for political feasibility of structural adjustment in Cameroon, the Gambia and Madagascar.

Regarding the usefulness of a SAM in sectoral policy analysis, it becomes evident that the sectoral linkages are an important feature of the SAM. If, for instance, a given sector is experiencing a positive (negative) external injection, this has effects on other sectors in the economy as well. It is clear that in a developing country the linkages between sectors are strong and any injection is likely to have far-reaching consequences. The major advantage of the SAM can be summarized to bring together the accounts of each of the various economic actors whose behaviour is modelled into a consistent framework. At least for the base year of the SAM, such a data set is required (Dervis et al. 1982, 161).

In this study, the policy experiments are created using data from the actual HIPC initiative. This data will be used to simulate the policy packages as single shock vectors to the economy. The crucial points are determining the actual level of funds allocated to debt service and the exact targeting of those. The impacts on productive sectors of the economy as well as the different household groups are the most interesting results of the experiments.

The structure of the SAM for Zambia follows the 'traditional' composition of a SAM. The SAM, constructed for 1995, has a total of 33 accounts, of which 13 were considered as exogenous and 20 as endogenous. The endogenous accounts in the SAM were:

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<sup>2</sup> In this paper, the social accounting matrix is used as a tool of analysis. Due to the scope of this paper to focus on the HIPC initiative and its economic impacts, social accounting matrices are described briefly. For thorough look into subject, more information can be found in Pyatt and Round (eds) (1985), Reinert and Roland-Holst (1997) and Robinson (1989).

- 11 sectors of production,
- three categories of labour,
- three types of household accounts,
- two capital accounts and
- a private sector account.

Exogenous accounts were:

- 11 sectors of production for imports,
- the Government and
- the rest of the world accounts.

The production and SAM multipliers, derived for the endogenous accounts of the SAM can be found in Appendices 3 and 4, respectively. These multipliers show the linkages within the economy based on the input-output part of the matrix, as well as the broader social accounting multipliers.

The SAM for Zambia has three types of households: urban skilled and unskilled labour and rural unskilled labour. The rural unskilled labour is considered to represent the poorest part of the population, with a large share of the group receiving their income from the non-commercial agricultural production. However, for the purposes of pro-poor policies there is a need to consider allocations to the urban unskilled labour as well. Due to the linkages of the economy, there is likely to be an observable increase in the income of the skilled urban households as well. This is because the households will receive interest on their capital used in the production process. Since the increase in demand due to more funds to unskilled labour will increase prices and profit, part of this increase goes to the skilled labour as well.

Regarding the ways to allocate the funds for poverty reduction, the Government of Zambia has created a national poverty reduction plan for 1999-2004 period. It can be assumed that the funds released from the debt service will be used according to the programme guidelines. The plan includes five areas of focus (Carlsson et al. 2000):

(1) Agriculture and rural development

- Increase agricultural production and food security.
- Improve quality of agricultural research and extension system.
- Improve access to agricultural credit, particularly for small-scale farmers.
- Improve livestock production and disease control.
- Promote rural electrification and use of alternative energy sources.

(2) Public physical infrastructure

- Promote construction, rehabilitation of rural roads, bridges etc. by using labour-based methods and alternative technology.
- Support construction of local markets, storage and clean water facilities.

- Support the development of transport and communication systems, as well as schools and health centres.
  - Promote the construction of irrigation systems, boreholes, dams and wells.
  - Ensure community participation in the development and maintenance of physical infrastructure.
  - Provide physical infrastructure for the disabled.
- (3) Urban micro-enterprises and the informal sector
- Provide financial, social and market intermediation in the informal sector
- (4) Development of human resources
- Achieve universal primary education, increase access to basic education and improve supply of text books.
  - Increase access to skills development and vocational training.
- (5) Coordinating, monitoring and evaluating poverty reduction programmes and activities
- Enhance the capacity of Ministry of Community Development and Social services.

The information above is more or less translated into two different packages of measures in the following scenarios.

#### **4.2 The production support scenario**

In this policy experiment, the expenditure that has been released from the debt service will be used to support domestic small- and medium-sized enterprises. The expenditure will be distributed evenly across industries according to the importance of each productive sector. However, it is also assumed that certain sectors will not receive support, due to their concentration to certain functions, which do not encourage small industries. Thus, support will be given to agriculture (both commercial and non-commercial), construction, manufacturing and market services. Sectors that were left out of the support scheme include energy, financial services, mining and capital goods and public services.

The policies promoted would address the poverty alleviation in a more indirect manner, as opposed to the direct transfer mechanisms. The expenditure focuses on the main points 1 to 3 from the list of activities provided in the previous section. The main focus of the expenditure will be on four sectors of the economy: non-commercial agriculture, commercial agriculture, transport and market services.

It is known that the HIPC initiative means a reduction of debt in total of US\$ 3.8 billion, or 2.5 billion in the net present value. Since the reduction means a reduced debt service, the funds that become available following this reduction will be used to promote the

industries in this experiment. In the income transfer experiment, a different approach to pro-poor expenditure is taken to contrast the results of this experiment.

The HIPC initiative for Zambia defines the nominal value of debt service relief to about US\$ 250 million per year over the period 2001-05 in nominal terms. In 2006-10 the relief will be US\$ 119 million per year. In the scenarios, the focus is on the first year initial impact. This means that the expenditure of US\$ 250 million in nominal terms was converted to 1995 value and further to Kwachas to be inserted in the scenario. Similar expenditure is used also in the other scenario of income transfers. The total expenditure that takes place is Kwacha 137 billion. The expenditure is allocated to the sectors of production in the following way:

- commercial agriculture K40 billion
- non-commercial agriculture K40 billion
- manufacturing K20 billion
- market services K20 billion
- transport K17 billion

It can be easily argued that there are a number of ways to carry out the similar experiment. The figures here represent an approach to convert the programme targets into sectors of production and in the proportion that could be reasonable. K80 billion to agriculture in total means that the government will support people in the rural areas, both in the hopes of promoting provision of goods economy-wide but also to increase the income of the farmers. Other expenditure will be more or less targeted towards the urban poor in various forms of support. The results of the scenario are presented in section 4.4.

### **4.3 Income transfer policies**

Unlike in the previous scenario, the focus of this policy experiment is on the direct income transfers, in the amount of the debt service. The income transfers will be directed to both rural and urban poor households as a weighted sum to illustrate the relative importance of both poor groups.

Since the total expenditure level was given in the previous experiment, the question to be solved was to determine the shares of expenditure for both groups. The number of urban poor has grown rapidly, as a consequence of net migration to cities from rural areas (Nokkala 2001). In Table 8, data on the rural and urban population is given. The expenditure will be targeted so that two thirds of the transfer is allocated to rural unskilled households and one third to the urban unskilled households. This experiment represents an acknowledgement of the fact that urban poverty is increasing, and needs to be dealt with as the more traditional rural poverty.

The income transfer will be Kwacha 92 billion to rural unskilled households and Kwacha 45 billion to urban unskilled labour. Altogether, the level of expenditure is the same as in the first scenario. The results of the scenario are presented in the following section.



Table 8  
Population growth in Zambia, rural and urban population, millions of people  
(FAO 2000)

Year	1964	1970	1975	1980	1985	1990	1995
Total population	3,614	4,189	4,841	5,738	6,410	7,239	8,193
Urban	843	1,264	1,686	2,285	2,624	3,038	3,525
Rural	2,771	2,925	3,155	3,453	3,786	4,201	4,668

#### 4.4 Results

The two scenarios produce different lines of future development in Zambia. The one focusing on support to productive sectors aims to higher the production volumes, which in its turn creates distributional effects on households due to increase in labour demand and higher wage level. The income transfer approach generates more domestic demand, boosts the production and creates a more or less similar loop as does the production scenario, so the interesting question is to see how the two scenarios differ from each other. It should be kept in mind that these results are only of the initial first year impact of the debt service relief.

Impacts on production are quite different in the two scenarios. It is evident that the scenario of production support is generating a substantial increase in the production, totalling 6.4 per cent. At the same time, the increase in household income is less than in the transfer scenario. Results on production from the two scenarios are reported in the Table 9. Perhaps the most interesting result is the growth of the non-commercial agricultural production in the two scenarios. The growth is 13.6 per cent in the income transfer scenario, exceeding the growth in the production support scenario. This is due to the strong linkages between the rural unskilled households and the non-commercial agriculture. Total production growth remains lower in the income transfer scenario, at 5.4 per cent.

Table 9  
Production effects of scenarios, per cent of increase in selected sectors

Sector	Production support scenario	Income transfer scenario
Non-commercial agriculture	13.3	13.6
Commercial agriculture	13.7	8.2
Manufacturing	7.7	6.9
Market services	9.1	6.8
Transport	9.2	7.1
Total production change	6.4	5.4

Of greater importance are the impacts on household income. In Table 10, the results on household incomes are reported from the two scenarios. As it turns out, the effects on the rural unskilled household income is greatest in the income transfer scenario. Also, the urban unskilled households gain more from this scenario. It is interesting, though, that the urban skilled households gain more from the production support scenario, as a consequence of not receiving any transfers in the income transfer scenario. The other significant factor is that the skilled households receive a large share of their income from the formal sectors of production, which receive support in the production support scenario. Thus, some of the support will benefit also the urban skilled households.

Table 10  
Household income impacts of the policy experiments, per cent

Household group	Production support scenario	Income transfer scenario
Rural unskilled	10.1	21.2
Urban unskilled	4.5	9.8
Urban skilled	7.6	6.4

To contrast the two scenarios, a third one was created as a mix of the two previous scenarios. Half of the funds were allocated as transfers, half as a production support package. All in all, the level of total expenditure remained the same. The results of this package show a result between the two both in terms of the household income and the production effects. In real life, this scenario has the realistic feature that most likely the allocation of funds will be a sort of mixture of the two extreme expenditure patterns. The policy package can have elements of small-scale business support as well as income transfer schemes in one form or another targeted towards the poorest in Zambia.

## 5 Conclusions

The results of the scenarios created and compared in this paper suggest that there are various possibilities how the debt service could be allocated between sectors of production or groups of households. Perhaps the most important issue that is demonstrated by the scenarios is that the growth in the productive sectors exceeds the annual level of 5 per cent. In practice, this means that any of the two alternative scenarios is able to create the targeted level in Zambia. Since the framework of analysis has been static, it is very difficult to say whether the level of growth can be maintained or not, or what will be the impact of other policies implemented at the same time.

However, if the results are valid, it seems that the initiative will fulfil its goals. First of all, more funds will be available for poverty reduction. Second, the funds will be sufficient enough in real terms to have a significant impact in the household income as well as the value of production. In this respect, the policy package would seem to be a successful one, independent of the initial allocation of the expenditure.

There is a recent study by the World Bank on the effects of the HIPC initiative from the financial perspective (World Bank 2001b). So far, the total HIPC debt relief committed

for the 23 first countries has been US\$ 17,371 billion, to amount to US\$ 20,490 billion when all the initiatives are completed. It is noticeable that the debt relief of Zambia is actually one eighth of the total debt relief. Therefore, it is one case, which can really demonstrate the impact of the initiative. Any results from the Zambian case are of great importance. In this sense, it is important to gain more insights of the possible impacts of the initiative on the economy. In this respect, a social accounting matrix or CGE approach can be extremely useful.

There are issues that remain questionable at this stage. One is the question whether the savings in the debt service following from the debt relief can be actually used for pro-poor policies in the form of increased government expenditure under policies described in the previous section. Zambia being heavily indebted, it may well need to increase its payments to other creditors, which are not following the conditionality of the debt relief. Whether this is the case remains to be seen. Such debt services will be automatically a reduction in the expenditure against poverty.

The scenarios in this paper represent only a first impact of the HIPC initiative. This means that the GDP growth predicted in this paper would only be true for the initial stages of the debt relief. To take the analysis further, a dynamic approach is required. Data is available for planned expenditures up to 2010, so a long-term analysis could bring additional information to the initial shock analysis in this paper. The obvious way to deepen the results in this paper is to carry out the policy experiments in a dynamic, for example, the CGE modelling, framework.

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## **Appendix 1 - Principal Economic and Political Events in Zambia, 1963-2000**

### Actions taken by Zambia

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- 1963- Central African Federation formally dissolves
- 1964- Zambia gains independence with Kaunda as president in October
- 1965- Rhodesia declares independence
- 1966- Zambia opens Maamba coal mine
- 1968- UK reduces aid, as Kaunda declares self-reliance in industry, state ownership, and nationalisation of firms
- 1971- copper prices start to fall, Zambia starts IMF facilities
- 1973- first oil crisis
- 1973-74- copper prices recover
- 1975- copper fall until 1979-80
- 1976- copper production reaches all-time high 712,000 tons
- 1979- second oil crisis
- 1980- coup attempt to Kaunda's government
- 1980- copper prices rise
- 1981- IMF facilities reach all-time high SDR 359 million
- 1982- Zambia is in financial crisis
- 1983- Zambia introduces reforms, devalues Kwacha, and discontinues debt payments,
  - USSR agrees to reschedule Zambia's debt
- 1984- copper prices collapse, Zambia's debt to IMF reaches all-time high SDR 754 million
- 1985- industrial and public sector problems trouble Zambia
- 1986- copper prices collapse again
- 1987- government cancels the economic reforms agreed upon with the World Bank and the IMF in 1985

1989- relations with the World Bank and the IMF are resumed

1991- arrears to the World Bank cleared, elections with new president Frederick Chiluba

1993- Zambia introduces cash budget and starts to reduce inflation

1996- Chiluba is re-elected as the president of Zambia

1997- privatisation programme is accelerated

1999- Paris Club agrees to restructure its loans to Zambia

2000- ZCCM privatisation is completed

#### Actions taken by the World Bank

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1967- first IBRD project loan to Zambia (loans continue through 1982)

1973- first program loan to Zambia

1976- second program loan

1978- first IDA credit to Zambia and Zambia becomes IBRD/IDA blend borrower

1983- disbursements are suspended

1984- approval of Export Rehabilitation and Diversification Project

1985- approval of Agricultural Rehabilitation Credit

1986- approval of Multi-Sector Credit and industrial reorientation credits

1990- Consultative group meeting and Paris Club agreement

1991- IDA approves recovery credits, in October disbursements are suspended

1993- Privatisation and Industrial Reorientation Credit II

1994- Economic and Social Adjustment Credit

1995- Agricultural Sector Investment Project and Health and Social Credits

1996- Economic Recovery and Investment Credit

1997- donors withdraw from BOP support

1999- approval of adjustment operation

2000- Enhanced HPIC initiative is prepared as a joint effort of the IMF and IDA

## Appendix 2- Macroeconomic assumptions 1999-2009

(IMF 2000b, World Bank 2001b)

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2000-2009
	Est.												Average
Real GDP growth, %	2.4	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.9
Real GDP per capita	0.2	2.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8
GDP in Kwacha billion	7522	9853	11431	13108	13902	14744	15636	16583	17587	18652	19781	20979	151128
Debt service paid*	136	169	158	148	151	211	202						
Debt service/exports	16	16	13	10	10	13	12						
Debt service/fiscal revenue	25	26	25	21	20	27	24						

\* = 1999-2000 debt service paid, 2001-2005 debt service due after the enhanced HIPC initiative relief



### Appendix 3 - Production multipliers of the social accounting matrix for Zambia

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Non Commercial Agriculture	1,113	0,195	0,034	0,102	0,041	0,007	0,025	0,020	0,037	0,008	0,012
2. Commercial Agriculture	0,093	1,259	0,042	0,153	0,060	0,009	0,033	0,020	0,033	0,010	0,022
3. Mining	0,001	0,001	1,971	0,005	0,037	0,001	0,011	0,003	0,006	0,004	0,005
4. Manufacturing	0,168	0,129	0,221	1,440	0,552	0,072	0,273	0,107	0,217	0,087	0,121
5. Capital Goods	0,015	0,020	0,066	0,099	1,163	0,029	0,120	0,033	0,046	0,033	0,035
6. Electricity Gas and Water	0,012	0,047	0,217	0,080	0,163	1,302	0,062	0,042	0,044	0,048	0,043
7. Construction	0,025	0,112	0,480	0,157	0,110	0,067	1,547	0,345	0,150	0,359	0,297
8. Market Services	0,013	0,046	0,154	0,088	0,096	0,122	0,379	1,103	0,068	0,097	0,082
9. Transport	0,019	0,022	0,113	0,089	0,069	0,051	0,112	0,070	1,069	0,044	0,064
10. Finance	0,011	0,022	0,143	0,083	0,110	0,077	0,149	0,070	0,066	1,087	0,075
11. Non-Mkt Public Services	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	1,000
Total multiplier	1,471	1,854	3,441	2,297	2,402	1,738	2,710	1,814	1,737	1,778	1,757
Own multiplier	1,113	1,259	1,971	1,440	1,163	1,302	1,547	1,103	1,069	1,087	1,000
Linkage to other sectors	0,358	0,595	1,470	0,857	1,239	0,436	1,163	0,711	0,668	0,690	0,757

#### Appendix 4 - Social accounting multipliers from the social accounting matrix for Zambia

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Non Commercial Agriculture	1,82	0,78	0,53	0,49	0,37	0,47	0,52	0,55	0,42	0,45	0,58
2. Commercial Agriculture	0,46	1,61	0,37	0,40	0,28	0,30	0,36	0,39	0,28	0,30	0,44
3. Mining	0,02	0,02	1,99	0,02	0,05	0,02	0,03	0,02	0,02	0,02	0,02
4. Manufacturing	1,18	1,10	1,13	2,12	1,14	0,90	1,20	1,11	0,93	0,93	1,13
5. Capital Goods	0,48	0,47	0,50	0,41	1,43	0,43	0,56	0,50	0,39	0,44	0,45
6. Electricity Gas and Water	0,17	0,20	0,36	0,19	0,25	1,43	0,21	0,20	0,16	0,18	0,20
7. Construction	0,32	0,39	0,74	0,35	0,28	0,31	1,81	0,63	0,36	0,60	0,58
8. Market Services	0,29	0,30	0,38	0,26	0,24	0,33	0,61	1,35	0,25	0,31	0,34
9. Transport	0,29	0,27	0,35	0,26	0,22	0,26	0,35	0,33	1,25	0,26	0,33
10. Finance	0,21	0,21	0,32	0,22	0,22	0,24	0,33	0,26	0,21	1,26	0,26
11. Non-Mkt Public Services	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	1,00
12. Labour (Unskilled Rural)	0,35	0,26	0,12	0,12	0,08	0,10	0,12	0,13	0,09	0,10	0,13
13. Labour (Unskilled Urban)	0,18	0,26	0,26	0,21	0,22	0,17	0,27	0,41	0,16	0,18	0,76
14. Labour (Skilled )	0,30	0,50	0,38	0,30	0,28	0,30	0,49	0,60	0,38	0,48	0,45
15. Operating Surplus	1,35	0,95	0,90	0,70	0,56	0,97	0,90	0,85	0,74	0,85	0,74
16. Consumption of Capital	0,15	0,19	0,33	0,17	0,14	0,27	0,24	0,21	0,18	0,21	0,16
17. Households - Unskilled Rural	0,82	0,60	0,44	0,36	0,28	0,45	0,44	0,42	0,35	0,40	0,40
18. Households - Unskilled Urban	0,18	0,26	0,26	0,21	0,22	0,17	0,27	0,41	0,16	0,18	0,76
19. Households - Skilled	1,60	1,58	1,57	1,12	0,96	1,45	1,60	1,65	1,26	1,51	1,33
20. Private sector	0,28	0,28	0,27	0,20	0,17	0,25	0,28	0,29	0,22	0,26	0,23
Total multiplier	10,43	10,23	11,21	8,10	7,41	8,83	10,59	10,29	7,79	8,93	10,29
Own multiplier	1,82	1,61	1,99	2,12	1,43	1,43	1,81	1,35	1,25	1,26	1,00
Linkage to other sectors	8,61	8,62	9,22	5,99	5,97	7,40	8,78	8,94	6,54	7,67	9,29

	12.	13.	14.	15.	16.	17.	18.	19.	20.
1. Non Commercial Agriculture	1,14	0,65	0,46	0,70	0,47	1,14	0,65	0,46	0,41
2. Commercial Agriculture	0,44	0,49	0,37	0,39	0,37	0,44	0,49	0,37	0,38
3. Mining	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,02	0,04
4. Manufacturing	1,13	1,08	1,10	1,11	1,10	1,13	1,08	1,10	1,14
5. Capital Goods	0,46	0,39	0,57	0,53	0,57	0,46	0,39	0,57	1,27
6. Electricity Gas and Water	0,17	0,16	0,18	0,17	0,18	0,17	0,16	0,18	0,25
7. Construction	0,33	0,29	0,32	0,32	0,32	0,33	0,29	0,32	0,46
8. Market Services	0,35	0,28	0,26	0,29	0,26	0,35	0,28	0,26	0,29
9. Transport	0,32	0,30	0,27	0,29	0,27	0,32	0,30	0,27	0,24
10. Finance	0,20	0,18	0,23	0,22	0,23	0,20	0,18	0,23	0,24
11. Non-Mkt Public Services	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
12. Labour (Unskilled Rural)	1,23	0,15	0,11	0,15	0,11	0,23	0,15	0,11	0,10
13. Labour (Unskilled Urban)	0,19	1,17	0,17	0,18	0,18	0,19	0,17	0,17	0,23
14. Labour (Skilled )	0,31	0,29	1,28	0,29	0,28	0,31	0,29	0,28	0,32
15. Operating Surplus	1,00	0,71	0,61	1,74	0,61	1,00	0,71	0,61	0,63
16. Consumption of Capital	0,15	0,13	0,13	0,14	1,13	0,15	0,13	0,13	0,16
17. Households - Unskilled Rural	1,59	0,40	0,32	0,76	0,34	1,59	0,40	0,32	0,32
18. Households - Unskilled Urban	0,19	1,17	0,17	0,18	0,18	0,19	1,17	0,17	0,23
19. Households - Skilled	1,34	1,08	2,19	1,90	2,18	1,34	1,08	2,19	1,07
20. Private sector	0,24	0,19	0,38	0,33	0,38	0,24	0,19	0,38	1,19
Total multiplier	10,82	9,14	9,15	9,73	9,17	9,82	8,14	8,15	8,97
Own multiplier	1,23	1,17	1,28	1,74	1,13	1,59	1,17	2,19	1,19
Linkage to other sectors	9,59	7,96	7,87	7,99	8,04	8,23	6,96	5,96	7,78