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# African Financing Needs in the 1990s

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Africa's external financing problem is much more than a structural imbalance between imports and exports. Debt relief measures will be an important source of financing.

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This paper — a product of the Economics and Finance Division, Technical Department, Africa Regional Office — was presented at the World Bank symposium on African External Finance in the 1990s, held in September 1990 in Washington, DC. A condensed version of the paper will appear in the forthcoming symposium volume. Copies of the complete paper are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Mavita Gomez, room J3-282, extension 34349 (87 pages, with figures and tables). October 1991.

The gross foreign financing requirements for all of Sub-Saharan Africa — before debt relief of any kind or the accumulation of new arrears — are projected to average about \$28 billion a year (in nominal prices) between 1991 and 2000, or about \$50 per capita annually. These figures compare with estimated gross financing of \$27-\$28 billion in 1988 and \$24-\$25 billion in 1982. This is equivalent to only about 12 to 14 percent of total capital flows to the developing world in 1988.

The annual levels decline in mid-decade to about \$26-\$27 billion a year but rise to more than \$30 billion by 2000. This variation in the trend reflects combined movements in the balance of trade in goods and services (excluding interest), debt service obligations, targets for increases in international reserves, and private transfers. High levels in the early years are the result of heavy debt service obligations; the later decline in these obligations helps reduce requirements mid-decade. Debt service obligations rise in 1991-93 on nonconcessional debt contracted in the last half of the 1980s but decline in 1994-97 and stabilize after that. The rising require-

ments in the last part of the 1990s result mainly from the continually widening trade deficit.

Debt service obligations — before rescheduling and before the accumulation of any additional arrears — comprise more than half of the gross external financing requirements in the first half of the 1990s, but fall to about 40 percent by the end of the decade. Debt service obligations were equivalent to about three-fourths of the gross external financing requirements in 1988 but only about a third in 1982.

The importance of debt service in total requirements reveals that the external financing problem in Africa is much more than a structural imbalance of imports and exports. Debt relief measures will be an important source of financing.

For low-income countries, however, debt relief alone will not solve their financing problem because their trade balance will continue to deteriorate. But for most middle-income countries where the trade balance is positive, debt relief may have a much more decided impact.

## **Contents**

### **Overview**

#### **Economic change and evolution**

- The last thirty years
- The crisis
- The reforms
- External flows and the investment-savings gap

#### **Saving, investment and efficiency of capital**

- Need for investment
- Demand for investment
- Domestic savings and investment
- Efficiency of investment
- Impact of policy actions

#### **Estimated financing requirements**

- Projected gross external capital requirements
- Projected financing sources
- Methodological summary

#### **Annex : The Framework and assumptions for the projections**

- The projections framework
- Basic assumptions
  - IDA-only countries
  - Nigeria
  - Selected IBRD borrowers
  - Simplified algebraic description of the model

### **Bibliography**

#### **Text Tables**

- 1 Growth of GDP, 1967-89
- 2 Evolution of key economic indicators for Sub-Saharan Africa, 1967-88
- 3 Evolution of key economic indicators for SPA countries, 1967-88
- 4 Investment and savings in Sub-Saharan Africa, 1966-88
- 5 Past and projected key economic indicators for Sub-Saharan Africa, 1985-88, 1995, 2000
- 6 Past and projected financing and debt relief for Sub-Saharan Africa, 1985-88, 1995, 2000
- 7 Prospective sources of financing for Sub-Saharan Africa, 1991-2000

#### **Charts**

- 1 Investment and growth in Sub-Saharan Africa, 1968-88
- 2 Investment and growth in Sub-Saharan Africa, 1980-88
- 3 Gross financing requirements of Sub-Saharan Africa, 1989-2000 (US\$ billion)

- 4 **Gross financing requirements of Sub-Saharan Africa, 1989-2000 (ratios to GDP)**
- 5 **Prospective financing by source in Sub-Saharan Africa, 1989-2000**

### **Annex Tables**

- 1 IDA-only countries: Key economic indicators, 1985-88, 1995, 2000
- 2 IDA-only countries: Financing and debt relief, 1985-88, 1995, 2000
- 3 Nigeria: Key economic indicators, 1985-88, 1995, 2000
- 4 Nigeria: Financing and debt relief, 1985-88, 1995, 2000
- 5 Selected IBRD borrowers: Key economic indicators, 1985-88, 1995, 2000
- 6 Selected IBRD borrowers: Financing and debt relief, 1985-88, 1995, 2000

### **Annex Charts**

- 1 Sub-Saharan Africa: Terms of trade index, 1989-2000
- 2 IDA-only countries: Gross financing requirements (US\$ billions), 1989-2000
- 3 IDA-only countries: Gross financing requirements (percent of GDP), 1989-2000
- 4 Nigeria: Gross financing requirements (US\$ billions), 1989-2000
- 5 Nigeria: Gross financing requirements (percent of GDP), 1989-2000
- 6 Selected IBRD borrowers: Gross financing requirements (US\$ billions), 1989-2000
- 7 Selected IBRD borrowers: Gross financing requirements (percent of GDP), 1989-2000

## Overview

The purpose of this paper is to discuss the magnitude of external resources that Sub-Saharan Africa may require during the 1990s. There can be no firm projections because requirements are affected both by the growth and efficiency targets chosen and by a wide range of factors, both internal and external to Sub-Saharan Africa, which often interact to reinforce or offset one another. However, the specific projections provided by this paper offer a point of departure for further discussions. To facilitate such discussions, this paper also provides a qualitative framework for considering how various factors affect resource requirements.

To achieve the GDP growth target of 5 percent a year by 2000 proposed in Sub-Saharan Africa: From Crisis to Sustainable Growth, the quantitative scenario in this paper shows that Sub-Saharan Africa could require gross external capital of \$28-29 billion a year, on average, for the period 1991-2000 (or \$21 billion a year in constant 1988 dollars, which compares to an actual gross external capital inflow of about \$28 billion in 1988). While this amount is large for Sub-Saharan Africa, it is relatively small as a share of total capital flows to the developing world (12-14 percent in 1988). As in the past, this amount can be financed by a combination of new money and debt relief (including arrears). Roughly, about half the gross capital inflows would finance net imports of goods and services (other than interest), needed for current and future growth, and the other half would finance debt service payments on borrowing that financed past expenditures.

Annual requirements would be high initially to cope with debt obligations, lower in the middle years of the decade, and higher at the end as debt servicing rises and the trade deficit continues to widen. Gross external financing at this level would be roughly equal to 15 percent of Sub-Saharan GNP, compared to gross national savings of 13 percent. Achieving this scenario will require

appropriate domestic policy reforms, especially those designed to raise investment to a level equivalent to 25 percent of GDP, and to achieve a dramatic improvement in the efficiency of capital.

The conceptual framework used in this paper for estimating external resource requirements is based essentially on the two-gap model, in which the gap between domestic savings and gross investment must equal the difference between imports and exports, which is financed by external capital or foreign savings. In the formulation of the two-gap model used in this paper, the relationship between imports and targeted output determines the required level of imports of goods and non factor services. An assumed export growth rate determines the export level. Thus, the external financing gap is largely a function of the target (growth of GDP) and two assumptions that together lead to the export-import (X-M) gap, plus projected debt service obligations. The investment-savings (I-S) gap is derived from the X-M gap. The assumed relationship between output growth and investment indicates the level of new annual investment required to attain the target GDP growth rate. Domestic savings are calculated as a residual to make the I-S gap equal to the X-M gap.

Behind this simple formulation lies a complex set of economic, structural and behavioral relationships. These projections are based on specific assumptions about key variables. Because these variables can be changed through specific policy actions, assumptions about policies help determine the structural economic changes and external resources needed to achieve certain targets. But there is no explicit formulation in the projections model linking the value of key variables to specific policy reforms. Instead, these linkages are discussed qualitatively.

To provide a context for the discussions, the paper starts with a section on the economic history and evolution of Sub-Saharan Africa. A section on savings, investment and efficiency of capital follows dealing with the feasibility of achieving the desired growth targets, the policy instruments available to attain them, and the policy reforms that African countries should implement to boost the demand for investment as well as private and public savings. The final section analyses the external resource requirements, as projected by the model, and discusses implications for other related economic and financial variables. A detailed description of the assumptions and the model is annexed to the paper.



## **Economic change and evolution**

### **The last thirty years**

About thirty years ago colonialism was ending in Africa. African leaders were optimistic about their political, economical and social future, and the donor community, sharing this optimism, contributed substantial resources.

Resources were channeled substantially toward industrialization. Agriculture took second place, basically supplying raw materials and providing tax revenues. In addition, the government paid a lot of attention to the social sector and infrastructure. The development strategy, fully supported by donors, entailed a dominant role for the government, which adopted multi-year plans, created public enterprises, set prices, controlled trade and directly allocated credit and foreign exchange.

This strategy appeared to pay off at first. GDP grew at 5.9 percent a year during 1965-73, about the same rate as for other developing countries. Strong export demand and high investment, financed from export earnings, commercial borrowing and aid, boosted the GDP growth rate. However, with time, the developing strategy showed its first failures, as countries began to stumble after the first oil shock.<sup>1</sup> By the middle of the 1970s Africa's performance started to lag behind that of other developing countries. By the 1980s output began to decline. As the crisis deepened, African

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<sup>1</sup> The biggest increases in oil prices, here referred to as oil shocks, took place in 1973-74 and 1979-80, and are the basis for the periods selected to average data.

countries started reforms programs, and GDP growth began to recover in the second half of the 1980s, but growth rates have remained below those in other developing countries except in 1989.

In 1965 Sub-Saharan Africa and Spain had about the same size economy (US\$27 and 24 billions respectively); 23 years later, Spain's US\$ 340 billion output was more than double that of Sub-Saharan Africa's, with only 8 percent of Sub-Saharan Africa's population and only 2 percent of its land mass. Spain graduated from the ranks of developing countries. Sub-Saharan Africa became instead the Third World of the Third World.

**Table 1 Growth of GDP, 1967-89  
(percent per year)**

	1967-73	1974-80	1981-84	1985-87	1988	1989
Sub-Saharan Africa	7.0	2.7	-1.1	2.6	2.5	3.6
less Nigeria	4.4	2.0	1.9	3.1	1.5	2.2
Non-African developing countries	6.5	5.4	3.5	5.4	5.8	3.4

Source: World Bank data files

Performance has varied greatly from country to country. Average annual GDP growth during 1961-87 ranged from 8.3 percent for Botswana to -2.2 percent for Uganda. Oil exports greatly affected performance, with oil exporters doing well or badly according to fluctuations in the oil prices. Middle-income countries have, in general, fared better than low income countries and small economies better than large ones. Domestic policies also had a major impact on countries' economic performance and their external financing requirements.

Despite the rich diversity of the countries that make up the continent, there are many common serious problems now constraining their development: the highest population growth rate in the world and in Africa's known history; low levels of investment and saving, inefficient resource use, weak institutional capacity and human resources, recent declines in per capita income and living standards, growing ecological deterioration, and increasing marginalization from the rest of the world.

### The crisis

Sub-Saharan Africa has by now experienced a decade of falling per capita incomes and has shown signs of erosion of its land and human resources.

In the late 1970s most African countries (in particular the SPA countries) expanded public consumption and investment. Instead of raising savings, they financed much of this with foreign funds, taking advantage of expanded borrowing based on unprecedented high export prices and negative real interest rates in international markets. This quick expansion required rapidly rising imports, which grew faster than during any other period in the past thirty years (7.6 percent annually for the years 1974-80). Imports were partly financed by nonconcessional borrowing. This borrowing continued up to 1982-83 despite a sudden rise in international interest rates, as borrowers and lenders believed that the high export volumes prior to the first oil shock could be soon restored, and that the high export prices would continue. These expectations did not materialize and soon the boom became bust. In 1984 nonconcessional lending was sharply reduced, in 1985 there was virtually none.

The first half of the 1980s indicated that the development strategy adopted by most African countries at the time of their independence had failed to cope with these realities and to achieve

what had been expected. The region was undergoing a severe crisis as shown in Table 2. Their economies were sliding rapidly. The high growth (7 percent a year) achieved before the first oil shock first gave way to slower growth (2.7 percent annual average for 1974-80) that was not sufficient to match the rapidly expanding population. Later, during 1980-84 both output and gross national income (GNY) shrank at an average annual rate of 1.1 percent a year. The loss in income was caused by the drop in output and exports; an all-time favorable terms of trade spared the region an even worse loss.

**Table 2 Evolution of key economic indicators for Sub-Saharan Africa, 1967-88**  
(average annual percentage change, unless otherwise indicated)

	1967-73	1974-80	1981-84	1985-87	1988
GDP	7.0	2.7	-1.1	2.6	2.5
Export volume	17.1	0.2	-7.5	2.1	1.2
Import volume	4.3	7.6	-6.8	-0.7	-2.8
GDI (percent of GNP) a/	16.7	22.3	16.7	15.0	16.6
GNS (percent of GNP) a/	13.0	17.2	9.0	8.8	8.0
Private consumption	4.1	1.8	1.1	1.3	2.2
Gross ODA (percent of GNP) b/	3.2	3.6	4.2	6.6	8.9
Terms of trade index (1980=100) a/	83.9	84.4	101.3	83.0	74.2
GNY					
Total	3.9	4.5	-1.1	0.7	2.4
Per capita	1.2	1.7	-4.1	-2.4	-0.9

Notes: a/ Refers to 1966-73  
b/ Refers to 1970-73

Source: World Bank data files

The increase in the investment rate that took place in Sub-Saharan Africa in 1974-80 did not translate into higher output growth in the following periods, as could have been expected. The drop in output that occurred in 1981-84 was caused in part by the very low efficiency of investment. (Once the reform programs began to help raise the efficiency of investment, GDP increased despite lower investment rates, see Table 2).

The crisis was pervasive, affecting all areas of the economies. During 1981-84 export and import volumes fell (by 7.5 and 6.8 percent annually, respectively); investment as a percentage of GNP went back to the 1966-73 levels (16.7 percent); gross national savings as a percentage of GNP averaged only 9 percent, or about half their 1974-80 level; foreign direct investment expanded at the lowest rate of the last thirty years; export market shares continued to erode. To make matters worse, net nonconcessional capital flows collapsed, and the negative real interest rates of the past gave way

to very high ones. Debt at 45 percent of GNP in 1983-84 was more than double its 1975 level, and the debt service payments, despite rescheduling, reached 27 percent of exports in 1984 or 4 times higher than in 1975. Despite the crumbling economies private consumption continued to grow during 1981-84, albeit at a small and reduced rate (1.1 per cent a year), financed by a rapid decline in the gross national savings rate (which reached an all time low of 7.3 percent of GNP in 1983) and modestly increasing net ODA flows. However, this consumption growth was lower than population growth, and per capita consumption declined at 2 percent a year.

The crisis of the 1980s was less severe for the oil importing countries than for the oil exporters, in part because export earnings fell less and they relied more on foreign aid than on commercial borrowing. During 1981-84 GDP still grew, albeit at a negligible rate (1.1 percent annual average), the lowest of any other period in the past thirty years. Private consumption also continued to grow (at 1.2 percent), but the rate was half what had been in the past. After slowing down in the previous period, both export and import volumes dropped at a rate of 2.6 and 3.5 percent a year, respectively. The investment share of GNP (17.7 percent) was lower than during 1974-80, but was still the second highest of all periods under review. However, the gross national savings share of GNP fell to an all time low (7.8 percent). The resulting investment-savings gap (9.9 percent of GNP) was the largest of any other period in the past thirty years, and much larger than the gap for Sub-Saharan Africa as a whole.

High population growth, oil price and international interest rates shocks, war and drought contributed to the crisis in Sub-Saharan Africa, but weak economic management was also a major cause. Inappropriate domestic policies and lack of policy implementing capacity were key impediments to improved economic performance. The need to redress the mistakes of the past and

make the necessary adjustments began to be felt in the early 1980s. The inability of African economies to respond to the shocks of the 1980s had made the case for reforms too strong to ignore.

### The reforms

By the mid-1980s many Sub-Saharan countries had begun the reform process; by mid-1990, 29 Sub-Saharan African countries had active Bank-supported adjustment programs, and 27 had IMF-supported programs.

Reforms programs started at first in the area of macroeconomic stabilization; fiscal, monetary, exchange rate and other macroeconomic reforms were used to bring aggregate expenditures in line with total available resources. The programs that followed, in the later 1980s, focused more on increasing output and reducing the social costs of adjustment. These reform programs increased the emphasis on adjustment policies to improve productivity and increase production and exports by liberalizing external and domestic trade, raising producer prices, strengthening the financial sector, restructuring public enterprises, improving public investment programming, reordering public expenditure priorities, and improving performance in key sectors, especially agriculture and industry.

These reform efforts have resulted in some improvements in many countries in the real exchange rate, real interest rates, fiscal balances, trade liberalization, pricing and public management, and other policies.

Even though the results for all Sub-Saharan Africa are dampened by those countries that have not engaged in reforms, the trends show how output growth has been restored for the region,

reaching 3.6 percent in 1989, compared to -1.1 percent in 1981-84. Export performance is beginning to turn around, but import volumes are still declining, albeit at a lower pace than before the reform period. Gross domestic investment and national savings, which reached their lowest point in 1983-85, are no longer declining as a percent of GNP (although the gap between the two remains about the same as in the early 1980s). Private consumption began to recover in 1985-87 and improved in 1988, as stronger output growth was channeled more into consumption than savings. (See Table 2.)

Achievements are much more transparent when the record for reforming countries is examined separately. Despite delays, slippages, reversals, and other signs of mixed policy performance, the progress that they have achieved since the mid-1980s is, on balance, positive as can be seen from Table 3 below, showing the performance of countries eligible for the Special Program of Assistance (SPA), which covers most reforming countries.



**Table 3 Evolution of key economic indicators for SPA countries, 1967-88 c**  
(average annual percentage change, unless otherwise indicated)

	1967-73	1974-80	1981-84	1985-87	1988
GDP	3.8	1.4	0.4	3.3	4.0
Export volume	4.7	1.1	-5.5	6.0	0.1
Import volume	3.6	1.9	-2.3	4.0	5.0
GDI (percent of GNP) a/	15.2	19.1	17.2	17.7	17.7
GNS (percent of GNP) a/	12.0	10.6	8.5	7.9	6.8
Private consumption	2.2	0.1	-0.5	2.7	2.2
Gross ODA (percent of GNP) b/	4.7	7.5	10.1	12.5	15.0
Terms of trade index (1980=100) a/	124.0	129.9	109.5	107.2	108.5
GNY					
Total	3.6	0.8	0.9	2.7	5.8
Per capita	0.8	-2.0	-2.2	-0.6	2.4

Note: a/ Refers to 1966-73

b/ Refers to 1970-73

c/ Eligible countries at the end of 1989 included: Benin, Burundi, Central African Republic, Chad, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Sao Tome and Principe, Senegal, Somalia, Tanzania, Togo, Uganda and Zaire.

Source: World Bank data files

GDP growth has averaged about 3.4 percent annually since reforms started, close to the average before the first oil shock, thus reversing a decade of declining per capita growth. Imports and exports have performed very strongly, reversing a decline. Because of the high GDP and export growth and favorable terms of trade, gross national income increased at an average of more than 4 percent a year during 1985-88, and per capita income has increased in 1988 for the first time since the first oil shock. Private consumption in the SPA countries has posted increases after the reforms started, but not sufficiently high to offset population growth. However, the share of gross domestic investment in GNP has improved only modestly from its 1981-84 level, and the share of national saving in GNP has continued to deteriorate. To compensate for the low national savings (7 percent

of GNP in 1985-88) donors have over time considerably stepped up their ODA contributions, which reached about 14 percent of the SPA countries' GNP during 1985-88, or almost three times the share in 1970-73. This ever-growing recourse to outside resources for growth and development reflects the failure of the African economies to achieve sustainable growth.

#### External flows and the investment-savings gap in Sub-Saharan Africa

As national savings dwindled and public consumption and investment continued, external resources have been used to finance growing fiscal deficits on both current and capital budgets. The investment-savings gap has increased two and a half times in 22 years, growing from 3.7 percent of GNP in 1966-73 to 7.4 percent in 1985-88. While in 1966 almost 90 percent of investment was financed by Sub-Saharan Africa's savings, in 1988 only 50 percent was. The persistent widening of this gap has occurred mainly in the IDA-only countries 2/. In Nigeria the gap decreased to its lowest point in 1974-80 and in the 1980s it was half than in the late 1960s and early 1970s. In other IBRD countries the gap increased to its highest point in 1974-80 and decreased in the 1980s, so that in 1988 it was at the same level than in 1967-73. (See Table 4.)

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2/ Countries eligible to borrow IDA credits but not IBRD loans.

**Table 4 Investment and savings in Sub-Saharan Africa, 1966-88  
(average annual percentage of GNP)**

	1966-73	1974-80	1981-84	1985-87	1988
<b>Sub-Saharan Africa</b>					
Gross domestic investment	16.7	22.3	16.7	15.0	16.6
Gross national savings	13.0	17.2	9.0	8.8	8.0
Gap a/	3.7	5.1	7.7	6.2	8.6
<b>Nigeria</b>					
Gross domestic investment	14.8	22.8	13.8	10.3	13.6
Gross national savings	10.3	23.7	8.8	8.4	8.7
Gap a/	4.5	-0.9	5.0	1.9	4.9
<b>Other IBRD countries</b>					
Gross domestic investment	22.2	29.5	26.4	21.8	19.6
Gross national savings	14.2	12.2	13.7	14.7	11.7
Gap a/	8.0	17.3	12.7	7.1	7.9
<b>IDA-only countries</b>					
Gross domestic investment	16.1	18.8	16.8	16.1	16.3
Gross national savings	13.8	10.6	7.3	6.9	5.7
Gap a/	2.3	8.2	9.5	9.2	10.6

Note: a/ Defined as investment minus savings

Source: World Bank data files

The decline in savings in Sub-Saharan Africa can be explained by three factors: a) declining income, which leaves fewer resources for public and private consumption and savings; b) the government's negative savings that resulted from growing recurrent budget deficits; and c) some misclassification of foreign inflows that may make the level of domestic savings look lower than it actually is.

National accounting identities define all net foreign capital as investment (by definition, net capital inflows finance the gap between domestic investment and national savings). From the perspective of changes in the stock of national savings, this definition may be correct -- the increase

in foreign liabilities created by the capital inflows reduces the contribution that national savings make to national assets. (If capital inflows are in the form of transfers, however, the definition is inappropriate because the inflows do not give rise to liabilities.) In practice, however, some of the capital inflows finance consumption, not investment, and smaller inflows would reduce consumption as well as investment. In these cases, the accounting identities make the investment rate appear higher than it is and the national savings rate appear lower than it is. Increases in net capital inflows will increase the discrepancy between apparent and actual rates. To illustrate, between 1970 and 1988, gross national savings declined by 5.3 percentage points of GNP; over the same period, net external financing increased by 5.5 percentage points of GNP. This overstatement of investment and understatement of savings presents a critical problem in projecting financing requirements, but may also help explain the puzzle posed by the declining savings rate in Sub-Saharan Africa, at a time when per capita incomes only stagnated.

Net external flows to Sub-Saharan Africa have almost doubled as a percentage of GNP during the past two decades. Net loan disbursements plus grants and net foreign investment amounted to 6 percent of Sub-Saharan Africa's GNP in 1970, but to 10.9 percent in 1988. Moreover, the net flows have become more concessional. In 1970 less than half the net flows were concessional compared to five sixths in 1988.

## **Savings, investment and efficiency of capital**

This section discusses the links between some key economic policies and the model's targets and variables, indicating how policy actions would help achieve target growth for Sub-Saharan Africa. It also reviews the region's past performance to give an idea of the feasibility of reaching the desired targets in the medium term. The section starts with a discussion of the need for investment required to reach the target growth rates. The relation between investment and output growth is a key behavioral parameter determining output growth. Second, there is a discussion of factors determining the demand for investment, which argues that inadequate demand for investment in Sub-Saharan Africa is an important impairment to investment and growth. Third, this section then analyses, domestic savings. Given the importance of public savings in increasing gross domestic savings, it suggests policy measures to reduce the current public deficit. A discussion about private savings follows, with the conclusion that raising private savings will be a medium-term effort contingent on establishing predictable macroeconomic conditions and achieving growth. Fourth, this section discusses policy actions to improve the efficiency of investment, needed to reach the target growth rates. Key policies cover public sector management, financial intermediation, relative prices, and institutional and human capital development. Finally, this section summarizes the impact of principal policy actions available to modify the main behavioral parameters of the model and discusses the mechanisms through which these actions operate. <sup>3/</sup>

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<sup>3/</sup> This discussion is based on the conceptual framework developed in the World Bank's publication Adjustment Lending Policies for Sustainable Growth.

## Need for investment

In the model, the GDP growth rate determines the need for investment, depending on the incremental-output-ratio (ICOR), which is a behavioral parameter determined by policies and by economic factors exogenous to the model. The ICOR, commonly referred to as the efficiency of capital, is often approximated by the ratio of the investment rate to the rate of growth of production <sup>4/</sup>. Although economic growth is determined by many variables, which are affected by different policy actions as well as by non-controllable events, the effects of these variables can be summarized by the level of investment and its productivity. However, no unique instrument of economic policy can lead to the desired levels of investment and capital efficiency.

Achieving an aggregate growth rate of 5 percent by 2000 would require an annual investment rate of 25 percent of GDP, provided that the ICOR is not higher than 5 (or the efficiency of capital is at least 20 percent). Reaching these levels of investment and efficiency of capital will not be easy. In the past (during 1968-88), the region as a whole achieved an average annual growth rate of 3.5 percent (2 percent when Nigeria is excluded), and an investment to GDP ratio of 17.5 percent (18 percent when Nigeria is excluded), with an implied efficiency of capital of 20 percent (11 percent when Nigeria is excluded). Only ten Sub-Saharan countries had investment rates and efficiency of

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<sup>4/</sup> A higher value for the ICOR implies lower efficiency of capital, and vice versa. (The efficiency of new capital investment is the reciprocal of the ICOR.) Actual values for ICORs can be estimated in various ways, but the simplest is the rate of new investment over the rate of GDP growth in the same year. (In the empirical presentation in this paper, the ICOR is usually calculated as investment in the previous year divided by the increment of GDP (valued at the previous year's price).) As with most summary empirical measures, the ICOR masks several complexities and will vary depending on the length of the period chosen, whether current or constant prices are used, exogenous effects on output levels (including those caused by changes in expenditures resulting from changes in the terms of trade), changes in utilization of capacity, and various delays between the time when investments are made and production begins to increase (for example, investments in human capital may have a longer lead time than investments in farms and factories).

capital that yielded average annual growth rates equal or superior to the 5 percent target during 1968-88 (Chart 1). In three of these countries good performance can be explained largely by unusually high oil export revenues. The 1980s witnessed a deteriorating situation (see Chart 2), caused by a less favorable international economic environment and the accumulating effects of past government economic intervention. During the period 1980-88, the arithmetical average annual growth rate for Sub-Saharan Africa was about 1.1 percent (1.7 percent excluding Nigeria), with investment reaching about 16 percent of GDP (about 18 percent excluding Nigeria). The efficiency of capital during this period was only 7 percent (10 percent excluding Nigeria).

While some increase in growth from recent low levels can be expected from larger and better use of (reportedly extensive) idle capacity, to go beyond past levels of growth will require substantial increases in both investments and capital efficiency. To achieve them decisive policy action is needed, leading to more competitive, as well as stable, prices and exchange rates, simpler regulations, and greatly improved institutional efficiency. While the policy measures and their sequencing will have to be tailored to the circumstances of each country, the sooner the measures are put in place, and the more substantial they are, the better will be their contribution to economic performance.

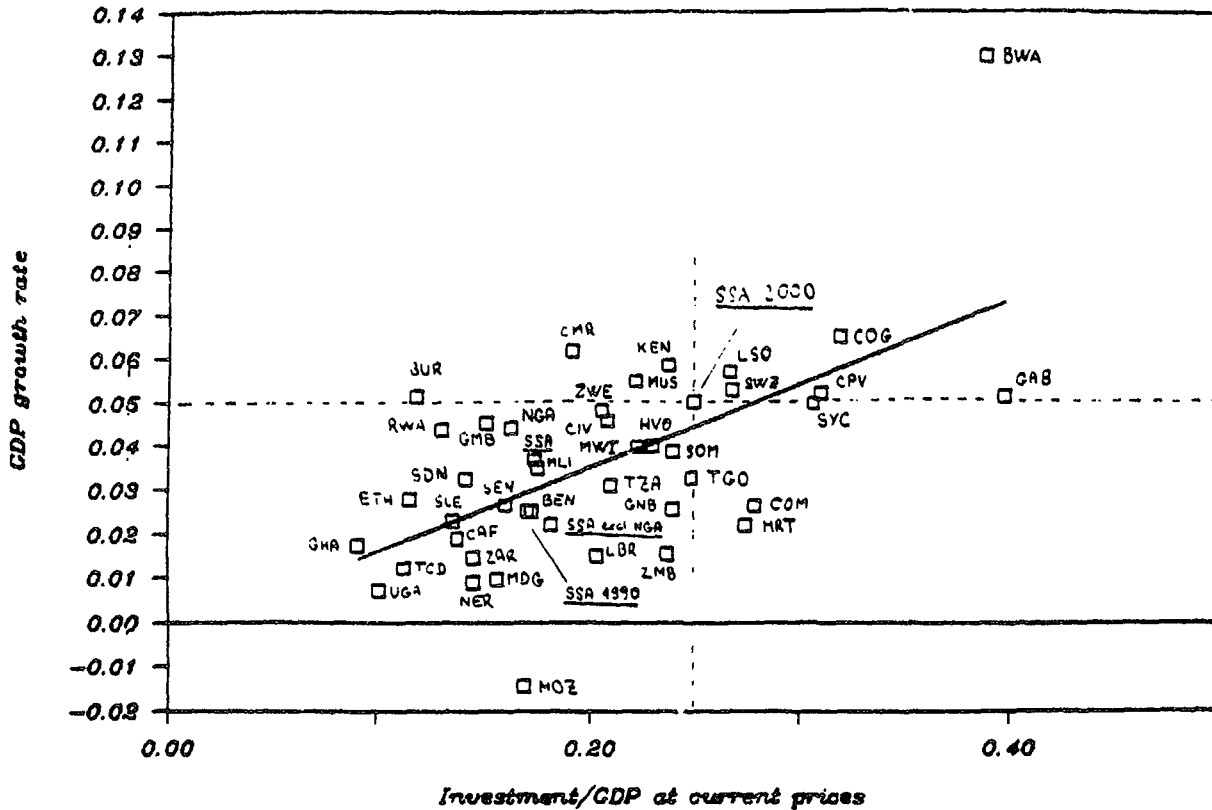
The challenge for Sub-Saharan African countries becomes even bigger when account is taken of the need for large investment in human resources and basic infrastructure. Investment in human capital both improves current living conditions for the population and increases the productivity of physical investment, providing the basis for sustained growth. Public investment in infrastructure, complementary to production activities, is also critical to improve efficiency of capital as well as to foster investment opportunities. However, neither of these two forms of necessary investments is likely to be quickly translated into significant increases in output. Moreover, in most countries,

substantial expenditures are needed simply to make up for past neglect and deterioration of social facilities and infrastructure.

Therefore, because a large share of investment will have relatively lower productivity in the near-term, to achieve the overall rates of capital efficiency required to meet the target growth, the efficiency of directly productive new investment will need to surpass the 20 percent productivity postulated for overall new investment. Or, alternatively, the level (or rate) of new investment will have to be higher than the postulated 25 percent of GDP to compensate for the lower efficiency caused by the special problems of the region.



Chart 1  
Investment and Growth in Sub-Saharan Africa, 1968-1988



Abbreviations:

SSA Sub-Saharan Africa  
 SSA excl. NGA Sub-Saharan Africa excluding Nigeria  
 SSA 1990 Target for sub-Saharan Africa to achieve in 1990  
 SSA 2000 Target for sub-Saharan Africa to achieve in 2000

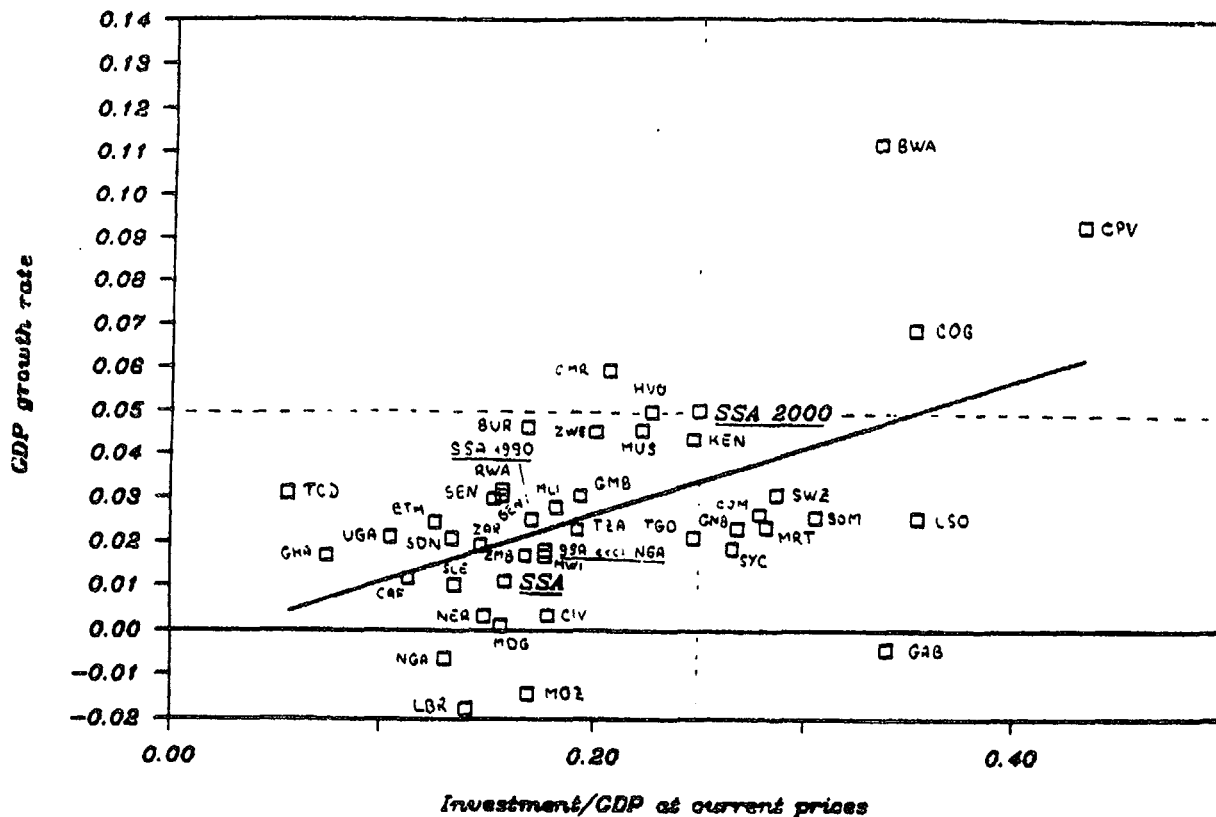
1 BEN	Benin	21 MWI	Malawi
2 BWA	Botswana	22 MLI	Mali
3 BVO	Burkina Faso	23 MRT	Mauritania
4 BUR	Burundi	24 MUS	Mauritius
5 CMR	Cameroon	25 MOZ	Mozambique
6 CPV	Cape Verde	26 NER	Niger
7 CAF	Central African Republic	27 NGA	Nigeria
8 TCD	Chad	28 RWA	Rwanda
9 COM	Comoros	29 SEN	Senegal
10 COG	Congo	30 SYC	Seychelles
11 CIV	Cote D'Ivoire	31 SLE	Sierra Leone
12 ETH	Ethiopia	32 SOM	Somalia
13 GAB	Gabon	33 SDN	Sudan
14 GMB	Gambia	34 SWZ	Swaziland
15 GHA	Ghana	35 TZA	Tanzania
16 GNB	Guinea-Bissau	36 TGO	Togo
17 KEN	Kenya	37 UGA	Uganda
18 LSO	Lesotho	38 ZAR	Zaire
19 LBR	Liberia	39 ZMB	Zambia
20 MDG	Madagascar	40 ZWE	Zimbabwe

Notes: Both variables were defined as the arithmetical averages of yearly indicators. The parameters of the regression line were calculated by least square method using the averages of the 40 countries as observations.

Sources: World Tables, 1989-90 Edition, From the data files of the World Bank, The Johns Hopkins University Press, Baltimore and London, 1990, both book and diskette versions.

Sub-Saharan Africa: From Crisis to Sustainable Growth, A Long-Term Perspective Study, The World Bank, Washington, D.C. 1989.

Chart 2  
Investment and Growth in Sub-Saharan Africa, 1980-1988



Abbreviations:

SSA Sub-Saharan Africa  
 SSA excl. NGA Sub-Saharan Africa excluding Nigeria  
 SSA 1990 Target for sub-Saharan Africa to achieve in 1990  
 SSA 2000 Target for sub-Saharan Africa to achieve in 2000

1 BEN	Benin	21 MWI	Malawi
2 BWA	Botswana	22 MLI	Mali
3 HVO	Burkina Faso	23 MRT	Mauritania
4 BUR	Burundi	24 MUS	Mauritius
5 CMR	Cameroon	25 MOZ	Mozambique
6 CPV	Cape Verde	26 NER	Niger
7 CAF	Central African Republic	27 NGA	Nigeria
8 TCD	Chad	28 RWA	Rwanda
9 COM	Comoros	29 SEN	Senegal
10 COG	Congo	30 SYC	Seychelles
11 CIV	Cote D'Ivoire	31 SLE	Sierra Leone
12 ETH	Ethiopia	32 SOM	Somalia
13 GAB	Gabon	33 SDN	Sudan
14 GMB	Gambia	34 SWZ	Swaziland
15 GHA	Ghana	35 TZA	Tanzania
16 GNB	Guinea-Bissau	36 TGO	Togo
17 KEN	Kenya	37 UGA	Uganda
18 LSO	Lesotho	38 ZAR	Zaire
19 LBR	Liberia	39 ZMB	Zambia
20 MDG	Madagascar	40 ZWE	Zimbabwe

Notes: Both variables were defined as the arithmetical averages of yearly indicators. The parameters of the regression line were calculated by least square method using the averages of the 40 countries as observations.

Sources: World Tables, 1989-90 Edition, From the data files of the World Bank, The Johns Hopkins University Press, Baltimore and London, 1990, both book and diskette versions.

Sub-Saharan Africa: From Crisis to Sustainable Growth, A Long-Term Perspective Study, The World Bank, Washington, D.C. 1989.

## Demand for investment

The common view emphasizes the inadequacy of funds for investment. However, inadequate demand for investment is equally or more important in explaining low levels of investment in Sub-Saharan Africa. This inadequate demand has been caused by the insufficiency of sound public investment projects that are attractive to international or bilateral lenders and donors, and by low and uncertain returns on private domestic assets -- caused in part by distorted economic and financial policies as well as political animosity and uncertainty which make private investment less attractive than in other countries. The weak demand for domestic investment is demonstrated by large capital flight from the region. While difficult to evaluate, cumulative capital from 36 Sub-Saharan African countries may have amounted to as much as US\$40 billion between 1976 and 1987 <sup>5/</sup>. This level of cumulative capital outflows between 1976 and 1987 is equivalent to about half the total official development assistance received by Sub-Saharan Africa during the same period. This situation suggests that stagnant investment and output resulted from inadequate demand for investment as well as inadequate national savings and external financing.

This capital outflow represents domestic resources that could have been used to increase domestic investment and output, if the demand (in contrast to the need) for domestic investment had been stronger. Keeping these resources within Africa would have required a favorable macroeconomic environment, investment opportunities yielding attractive returns, and credibility that

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<sup>5/</sup> See Chang and Cumby. This estimate is based on a broad definition of capital flight, measuring the total increase in the private sector's net foreign assets. An alternative measurement, based on the change in the stock of private claims held abroad, gives an estimate about 20 percent lower. In a different study, Alexander Yeats calculated that African countries paid considerably more than other developing countries for the same imports; part of these higher payments is a conduit for capital flight.

appropriate policies would continue. Had this capital been invested in the region, it could have raised the overall investment rate by about 2 percent of GDP on average during the period. Assuming a linear function between investment and output, this cumulative capital flight would have caused an output loss by 1987 of about 30 percent of GDP.

Reducing capital flight would require a substantial increase in the demand for domestic investment. Reform of key policies would help, including the following:

- A. Establishing and maintaining a competitive and predictable real exchange rate, a budget deficit low enough to be sustained without recourse to excessive borrowing and monetary growth, and a low and stable inflation rate;
- B. Minimizing price distortions and removing excessive regulations on production and trade, so that efficient activities are adequately remunerated and inefficient ones are discouraged;
- C. Removing legal and bureaucratic impediments to investment by domestic and foreign individuals and firms;
- D. Investing in and improving maintenance of public infrastructure that is necessary to raise the level and efficiency of production; and
- E. Increasing financial intermediation by expanding or creating a resilient financial system, with adequate supervision to ensure the existence of sound and efficient institutions.

## Domestic savings and investment

Distorted policies that discourage and limit the scope for domestic savings, plus high interest payments on foreign debt, have also substantially reduced the region's capacity to finance investment. Between 1966 and 1988 the share of gross national savings in GNP dropped more than a third, to 8 percent, <sup>6/</sup> and the investment-savings gap increased sevenfold, to 9.2 percent of GNP. The decline in national savings was caused by growing negative savings of the public sector and a slight decline in private savings, while net factor payments abroad were increasing. To meet the long-term investment target (25 percent of GDP), domestic savings will have to increase substantially. Policy measures to increase public as well as private savings are discussed below.

### Public savings and investment

For the majority of Sub-Saharan African countries, income levels are low and domestic financial systems are underdeveloped and weak. Therefore, the potential to increase private savings in the shortrun is low. Thus efforts to raise domestic savings have to focus first on the public sector. Increasing public sector deficits have been the main reason behind a dramatic decline in the overall domestic savings rate in Sub-Saharan Africa. Current public sector deficits (excluding capital expenditures) increased from 3.3 percent of GDP to 7.2 percent of GDP during 1972-87.

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<sup>6/</sup> The decline of national savings might have been lower than estimated because of the possible overreporting of foreign-funded investment and underreporting of foreign-funded consumption. Savings are calculated as the difference between production and consumption. To the extent that part of consumption has actually been financed by foreign funds (and would not occur without this foreign financing), actual domestic savings will be higher than calculated.

The deficits have largely been the result of weak revenue performance and the high share of government consumption in GDP. In 1988 government consumption in Sub-Saharan Africa represented 15 percent of GDP; which is a higher share than in any developing region. Reducing the public sector deficit will contribute to a more stable macroeconomic environment, to an improvement in the balance of payments current account, and to an increase in private savings. 7/

Reducing current public expenditures or increasing revenues are difficult, and governments are often tempted to cut public investments more than warranted. The result is a decline in investment and growth. On the other hand, a reduction of current public expenditures through a cut in essential services could require the private sector to increase its expenditures on these, which would diminish the increase in total domestic savings. When attempting to reduce government expenditures, special care should also be taken to keep expenditures on maintenance at adequate levels, since their neglect has often increased the need for future investment.

Reducing selective current expenditures together with raising revenue through measures that imply minimum distortion are required to reduce the public sector deficit without adversely affecting other sectors of the economy. Among measures to reduce current expenditures, the following would be appropriate for most Sub-Saharan African countries: reducing operational subsidies to parastatal and public enterprises; tighter control over public sector wages and the number of public workers; and lower defense spending. Among measures to enhance public revenues are: switching from reliance on trade taxes to taxes on consumption and income; charging a larger share of the cost for

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7/ The impact of the reduction of the public deficit on the rest of the economy depends on how the deficit was financed and how it is reduced.

infrastructure and other public services -- roads, electricity, water and sewerage, and telecommunications (allowing for cross-subsidization among different groups of consumers).

#### Private savings

Private savings in Sub-Saharan Africa do not seem to have been significantly affected during the period of stagnating or declining output. They have been a relatively constant share of GDP for over 15 years, amounting to 21 and 20 percent of GDP in 1972 and 1987, respectively <sup>8/</sup>. However, over the medium to longterm Sub-Saharan African countries will need to increase private savings to reduce dependency on foreign aid. The best way to increase private savings is the application of policies conducive to a stable macroeconomic environment and steady growth, which help create the economic confidence needed to promote larger private savings.

The realization of the virtuous circle "growth - savings - growth" requires a resilient financial system to help mobilize financial resources for sound investment opportunities and a shift of resources from less attractive to more profitable activities as other distortions are reduced. Financial systems will be more effective in mobilizing and allocating resources if governments minimize the use of widespread credit allocation systems -- unrelated to sector economic profitability -- and the practice of financing the public deficit through commercial banks. Moreover, severely impaired financial institutions (with many non-performing assets) will need to be closed or restructured (which may require additional resources to pay off depositors and lay off personnel), while an appropriate set of regulations and conditions are established to facilitate entry to domestic banking and encourage competition.

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<sup>8/</sup> See Sub-Saharan Africa: From Crisis to Sustainable Growth.

Low or negative real interest rates have prevailed in most Sub-Saharan African countries, discouraging the holding of financial assets, and thereby reducing financial deepening. Although the final impact of low interest rates on levels of savings and investment is uncertain, a recent study of eighty-one developing economies <sup>9/</sup> showed that low interest rates, by favoring nonfinancial forms of savings, constrained growth mainly through a reduction of the productivity of investments.

### Efficiency of investment

High rates of saving and investment, although necessary for sustained growth of output, do not guarantee it. Worldwide empirical evidence has not shown a straightforward link between growth and either saving or investment (1989 World Bank Conference on Development Economics, Angus Deaton). Several economic models (1962, Arrow; 1986, 1988, Romer; and 1988, Lucas) emphasize the role of human capital as a necessary complement to physical capital accumulation to achieve growth. In more general terms, the extent to which physical investment results in sustained growth depends on the efficiency of investment.

The efficiency of investment has drastically declined in Sub-Saharan African during the last 30 years. Although official figures might overestimate investment values for recent years (because recurrent public expenditures financed by foreign project aid are usually classified as capital, or investment, expenditures), the conclusions are still striking. The rate of return on net investment has

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<sup>9/</sup> 1989 Background Paper for WDR by Gelb.



declined fourteen-fold between 1961-73 and 1980-87. <sup>10/</sup> During 1980-88, the average productivity of new investment was only 7 percent, as shown in Chart 2.

The main causes for the low, and declining efficiency of capital in Sub-Saharan Africa can be traced to distortions in the following policy areas: poor public sector management including bad public investments; inadequate or inappropriate financial intermediation; price distortions will led to less productive resource allocation; and inadequate institutional and human capital development. Sustainable long-term growth will require decisive policy reform in all these areas to reverse the declining trend of capital efficiency and to achieve the levels required to reach the output growth targets.

Public spending decisions strongly affect the efficiency of overall investments. The role of the government is particularly large in Sub-Saharan African countries -- total public expenditures were more than 27 percent of GNP in 1986 (compared to 19 percent in low-income countries outside Africa). Although no estimate of the return on total public investments is available, Sub-Saharan Africa: From Crisis to Sustainable Growth presents examples of poorly justified and highly inefficient public investments. There has been duplication and waste, and several investments have been over-dimensioned. In addition to the lack of operation of market mechanisms or alternative objective criteria to evaluate public investment projects, the rapid increase in foreign financing in the 1980s may have tended to relax the rigor of investment decisions. Investments in new facilities and equipment have also been preferred over maintenance of existing ones, resulting in a marked deterioration of existing capital stock, thereby reducing overall productivity.

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<sup>10/</sup> Based on the estimate from Sub-Saharan Africa: From Crisis to Sustainable Growth, which assumes a depreciation rate of 10 percent of GDP.

Direct allocation of credit and forced lending have been widely used in Sub Saharan Africa, often to support and subsidize investments of low efficiency rather than to finance more economically productive investments. The principal problem of administratively allocated credit is the lack of link between investments financed through that credit and their productivity, resulting in an arbitrary allocation process. As a result, overall efficiency of investment suffers. In many cases credit has been directed to cover continuous losses of public sector enterprises. That credit does not contribute to increasing output, while crowding out potential productive investors. Highly subsidized credit has also undermined the need for investments to be productive because debt service obligations correspond to only a portion of the original amount borrowed. Forcing financial institutions to lend to inefficient sectors or enterprises has resulted in high levels of non-performing assets, which may require those institutions to increase interest charged to other borrowers, while reducing the level of financial intermediation.

Inefficient price distortions are more common in Sub-Saharan Africa than in other regions. Large state monopolies, widespread subsidies, controlled domestic prices and interest rates, and overvalued currencies coupled with rigid exchange rates have directed investments to the activities that benefit most from the distortions rather than to those with the largest economic returns. Agricultural production, which presents comparative advantages in many of the countries of the region, has been especially affected by restrictions on private marketing of key crops and by low farm prices. These policies, together with overvalued currencies, have kept agricultural growth well below its potential during the past 30 years, at only 2 percent per year. Agricultural exports have declined, and food imports are increasing at about 7 percent per year. For agriculture to develop its potential, governments have to reduce implicit and explicit taxation. Agricultural exports (and efficient import

substitution) will require adequate exchange rate and trade policies, that eliminate the bias produced through overvalued currencies, heavy import protection and export subsidies that favor mainly industrial production.

The lack of well-developed public and private institutions has been an important constraint to efficiency and growth in Sub-Saharan Africa. Appropriate economic policies can create the conditions for higher efficiency; but achieving higher efficiency and sustainable growth over the long term also requires the development of human and institutional capacity. Three distinct elements of required capacity building in Sub-Saharan African countries are mentioned in Sub-Saharan Africa: From Crisis to Sustainable Growth. They are: i) human development, especially the provision of basic health, education, nutrition, and technical skills; ii) the restructuring of many public and private institutions to create an environment in which skilled workers can function effectively; and iii) political leadership that understands that institutions are fragile entities, painstakingly built up, and therefore requiring sustained nurturing.

### Impact of policy actions

The final impact of policy actions on key behavioral parameters of an economy (the ratio of gross investment to GDP, the ratio of domestic savings to GDP, the ratio of incremental output to new gross investment, the import elasticity and export growth) is the result of the interaction of multiple transmitting mechanisms. Policy actions might affect a given parameter "directly" through one specific mechanism (for example, import tariffs reduce imports by increasing their domestic price) or "indirectly" through the interaction of different mechanisms (for example, import liberalization may

increase exports because an increased demand for imports will increase demand for foreign currency which may produce an exchange rate depreciation that raises incentives to exporters).

Some parameters (the ratios of investment and savings to GDP and the ratio of incremental output to new investment) can be directly modified, without negative consequences for other parameters or risk of deviating from the growth targets, but policies designed to affect other parameters directly (for example, import restrictions to lower the import elasticity or export subsidies to raise export growth) are likely to lower growth and efficiency. In addition, other parameters that affect long-term development, have not been incorporated in the projections model, but nevertheless, need to be considered for policy design. Among them, some of the most important are population growth, income distribution, and environmental conservation.

The following is a summary of the main policy tools to influence the principal parameters of the model and a discussion of the main mechanisms through which they operate.

Increase in demand for investment

Reduction of current public deficit: Depending on how the deficit is financed, reducing it may increase long-run demand for private investment by lowering inflation or interest rates, although aggregate demand is also initially compressed. Reducing it also increases private savings.

Reduction of public investment: Reducing public investment increases the demand for private investment if the projects that were eliminated are substitutes for private investment, but reduces the demand for private investment if the eliminated projects complemented it (such as infrastructure).

Tax increases: Depending on the type of taxes, increases in taxes may reduce short-term demand for private investment through reduction in profitability of capital, but may raise long-term private demand for investment if they help reduce inflation and the need for future devaluation. They also reduce private savings through reduction in disposable income.

Devaluation: Devaluation of a controlled, overvalued exchange rate increases long-term demand for private investment through increase in profitability of tradable goods. It also increases long-run private savings through increases in disposable income. It also promotes exports. In the absence of significant protection it increases efficiency of capital by stimulating more efficient production of exports and import substitutes. However, a devaluation of a reasonable exchange rate may only produce inflation and no sustainable change in the real exchange rate.

Monetary contraction or restrictive credit policy: In the short-run, it reduces the private demand for investment through higher real interest rates, lower aggregate demand and lower profitability of capital.

Increase in private savings

Monetary contraction or restrictive credit policy: In conjunction with lowering the current fiscal deficit monetary contraction increases long-run private savings through lower inflation, increased disposable income, and increased return on financial savings.

Financial liberalization: When the result is to eliminate highly negative controlled interest rates, it increases private savings through increase in the remuneration on financial savings. It improves efficiency of capital through increase in real interest rates, and consequent elimination of unprofitable investments.

## Increase in efficiency of capital

Foreign trade liberalization: When accompanied by reduction in domestic price and trade controls, foreign trade liberalization raises the efficiency of capital closer to world standards by shifting production to sectors able to compete internationally. It also promotes exports by reducing the anti-export bias of protection. However, trade liberalization, if excessive or not appropriately implemented, can be dangerous to some economies, specially because structural deficiencies keep them from competing internationally.

Elimination of directed credit: It increases the efficiency of capital by permitting different activities and sectors to compete for available credit. In the absence of serious price distortions, the more efficient activities would be better able to afford access to credit, while less efficient ones would have to modernize, restructure or stop.

Improvement in composition of public investment: It increases the efficiency of capital through better application of economic/social cost benefit analysis to public investment. Economically justifiable projects (including externalities) would replace projects imposed by interest groups.

Improving composition of public expenditures: It increases the efficiency of the capital stock by reallocating expenditures from building new capacity to maintenance, and making better use of existing capacity. Expenditures in improving human capital provide the basis for long-term sustainable growth.

The required intensity of the policies discussed above and the proper sequencing vary among the different countries in Sub-Saharan Africa. However, the need for their application is common to most countries if the target growth rates are to be achieved. Implementation of these policy reforms will affect other parameters of the economy, most notably export growth and the import elasticity.

Most exports from Sub-Saharan Africa are primary commodities, for which Sub-Saharan Africa has lost an important share of the world market. Recovering or increasing such share in the medium-term will be difficult, but not impossible if adequate policies are implemented. However, these exports are not likely to become a leading force behind long-term export growth given the low growth of world demand for these commodities. In the long term, as a result of the use of a competitive exchange rate and the reduction of the anti-export bias of the current protectionist policies, non-traditional exports can be expected to increase their share in total exports and become a driving force in expanding the value of total exports.

Trade liberalization, if coupled with increased access to foreign financing, is likely to raise import elasticities in Sub-Saharan economies in the medium term, which will help compensate for the compression of imports in the late 1970s and early 1980s. This is also consistent with historical evidence showing that the ratio of imports to GDP increases during the early stages of sustained economic development to levels that could surpass 30-35 percent. However, over the longer term, trade liberalization should also improve capital efficiency, which will stabilize and possibly lower import elasticities. The import elasticity will also be affected by exchange rate policies, and its sustainability at a high level will require either equivalent export growth or continued reliance on external financing.

## **Estimated financing requirements**

This section discusses the range of projected capital requirements for Sub-Saharan Africa during the 1990s, the sensitivity of the projections to changes in major parameters, the model and assumptions that underlie the projections, and some caveats about some of the parameters used in the model.

### **Projected gross external capital requirements**

Financing requirements are projected on a gross basis, including debt service obligations. The requirements are the sum of three major components: the trade balance (of goods and services, excluding interest obligations on external debt), all external debt service obligations, and assumed increases in foreign reserves. Financing requirements for the region thus comprise both what is required to improve growth and development in the future and to deal adequately with the legacy of past borrowing for earlier consumption and investment expenditures. The total regional requirements are the sum of separate estimates for Nigeria, selected IBRD borrowers, and IDA-only countries.

#### **Sub-Saharan Africa**

The gross foreign financing requirements for all of Sub-Saharan Africa, before debt relief of any kind or the accumulation of new arrears, are projected to average about \$28 billion a year (in



nominal prices) between 1991 and 2000, or about \$50 per capita annually (see Chart 3) 11/. These projected financing requirements compare with estimated gross financing of \$27-28 billion in 1988 and \$24-25 billion in 1982 12/. Foreign financing at this level is equivalent to only about 12-14 percent of the total capital flows to the developing world in 1988.

The annual levels decline in the middle of the decade to about \$26-27 billion a year but rise to over \$30 billion by 2000. This profile reflects the combined movements in the balance of trade in goods and services (excluding interest), debt service obligations, targets for increases in international reserves, and private transfers. The high levels in the early years are caused by high debt service obligations, and the decline in these obligations later helps reduce requirements in the middle of the decade. Debt service obligations rise in 1991-93 on nonconcessional debt contracted in the last half of the 1980s, but they decline in 1994-97 and stabilize after that. The rising requirements in the last part of the 1990s result mainly from the continually widening trade deficit.

Debt service obligations -- before rescheduling and before the accumulation of any additional arrears -- comprise more than half of the gross external financing requirements in the first half of the 1990s, but fall to about 40 percent by the end of the decade. In comparison, debt service obligations

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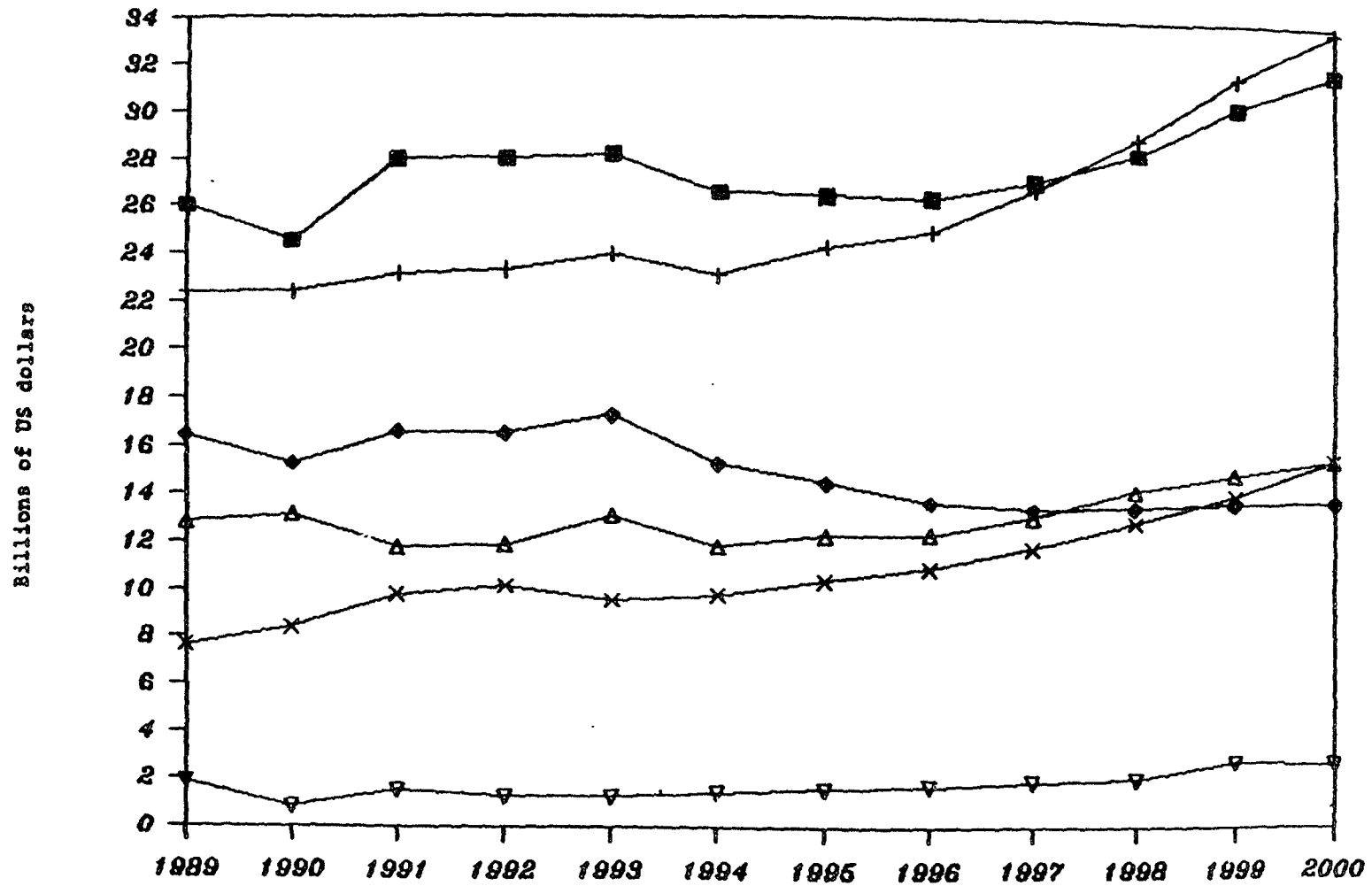
11/ The empirical basis for the estimates excludes 11 Sub-Saharan countries (as well as Namibia) because of their extremely small size (Cape Verde, Comoros, Djibouti, and Equatorial Guinea), inadequate statistics (Angola), or relatively small expected requirements for exceptional foreign assistance (Botswana, Gabon, Lesotho, Mauritius, Seychelles and Swaziland). These countries accounted for less than 10 percent of Sub-Saharan GDP in the mid-1980s. Three mineral-rich countries (Angola, Botswana, and Gabon) accounted for almost all of the economic output of these countries (85 percent), and these countries also have relatively small debt service obligations and trade deficits. Thus, the exclusion of this set of countries is unlikely to have a significant impact on projections of total financing requirements.

12/ This historical figure includes an estimate for debt service obligations that were not paid, either because they were rescheduled or allowed to fall into arrears. For example, unpaid debt service was on the order of \$10 billion in 1988 (excluding any interest arrears on short-term debt).

were equivalent to about three fourths of the gross external financing requirements in 1988 but only about a third in 1982. The importance of debt service in total requirements reveals that the external financing problem in Africa is much more than a structural imbalance of imports and exports and indicates the importance of debt relief measures as a source of financing.

Chart 3  
 Gross Financing Requirements of Sub-Saharan Africa, 1989-2000  
 (Billions of US dollars)

38



- Gross financing requirements before debt relief
- + Gross financing requirements after debt relief
- ◆ Debt service obligations before debt relief
- ▲ Debt service obligations after debt relief
- x Trade deficit including private transfers
- ▼ Change in reserves

**Table 5 Past and projected key economic indicators for Sub-Saharan Africa, 1985-88, 1995, 2000  
(average annual percentage change unless indicated otherwise)**

	1985-88	1995	2000
<u>Domestic indicators</u>			
Real gross domestic product (GDP)	2.6	4.0	5.0
Real gross domestic investment (GDI)	-6.9	8.7	7.7
GDI (percent of GDP)	14.0	20.7	25.0
Gross domestic savings (percent of GDP)	11.4	16.6	20.0
Real consumption per capita	-0.7	0.1	1.3
Real gross national income (GNY)	-1.8	4.2	5.4
Real GNY per capita (1988 US\$)	314.0	304.0	334.0
Real effective exchange rate	-4.0 a	-3.3	-3.4
ICOR (at 1988, 1994, 1999 prices respectively)	6.8	4.9	4.8
<u>Trade indicators and official development assistance</u>			
Import elasticity	-1.6	1.0	1.0
Import volume	-4.0	4.1	5.0
Imports (percent of GDP)	22.9	33.1	39.3
Export volume	1.9	3.6	4.3
Exports (percent of GDP)	20.3	29.0	34.3
Import prices	6.3	4.6	5.4
Export prices	-4.6	4.8	5.9
Terms of trade index (1988=100)	111.5	103.5	107.5
Real gross ODA	13.9	3.3	1.1
Gross ODA (percent of GDP)	5.9	8.6	9.0
<u>Debt service indicators before debt relief</u>			
Debt service ratio (percent of exports)	-	26.5	15.7
Debt service (percent of GDP)	-	7.8	5.4

Note: a. Median for about three fourths of the Sub-Saharan countries; 1986-88.

Sources: World Bank data and projections.

The trade gap widens during the decade because export growth lags behind import growth in aggregate (owing primarily to the low growth in Nigerian oil exports -- see Annex), the terms of trade decline for oil-importing countries, and the base for projecting import values is about a third

larger than export values. Reducing the trade gap in the short-run would require measures to restrict imports, which would also reduce efficiency of production, constrain export performance, and thus restrict growth of output. Over the longer term, production structures might become less import-intensive as domestic production becomes more efficient (although the result would depend, in part, on relative prices). However, the most effective way to reduce the trade gap will be to achieve export growth that is considerably faster than GDP growth, rather than to reduce import intensity. In the short run, export performance can be improved by getting exchange rates more in line with competitors -- as demonstrated by many African countries since the mid 1980s. But achieving substantial long lasting increases in export growth rates is likely to be a slow process, especially as it requires achieving very high growth rates in new products that initially account for only a minor share of total exports. Raising export growth rates in these new products will be easier if imported capital and intermediate goods are not unnecessarily constrained by inadequate foreign financing.

In real terms (deflated by projected import prices), the gross external financing requirements would average about one fourth less than nominal requirements, averaging about \$21 billion a year in 1990 prices; by the end of the decade, they will have declined to about \$19 billion in 1990 prices. As African economies continue to grow over the period, gross external financing requirements would also decline as a share of GDP, from about 18 percent in the early 1990s to about 13 percent by 2000 (see Chart 4). After 2000, gross external financing requirements could continue to rise in nominal terms while declining as a share of GDP.

**Table 6 Past and projected financing and debt relief for Sub-Saharan Africa, 1985-88, 1995, 2000 (average annual percent of GDP unless indicated otherwise)**

	1985-88	1995	2000
Total foreign financing required			
US\$ billion	14.8	26.5	32.0
Percent of GDP	10.2	14.2	12.7
Gross foreign inflows projected	10.1	11.9	11.9
of which: Loan disbursements	6.5	6.2	5.8
Official transfers	3.1	5.0	5.3
Direct foreign investment	0.4	0.7	0.8
Net debt relief a/	.. b/	1.2	-0.7
Residual financing gap	0.1	1.1	1.5
Memo items:			
Debt service indicators <u>after</u> debt relief			
Debt service ratio (percent of exports)	31.2	22.5	17.7
Debt service	6.5	6.6	6.1

Notes: a/ Net of moratorium obligations on consolidated amounts.  
 b/ Debt relief and accumulation of arrears have already been taken into account in calculating financing requirements because historical debt service is shown as payments, not obligations.

Sources: World Bank data and projections.

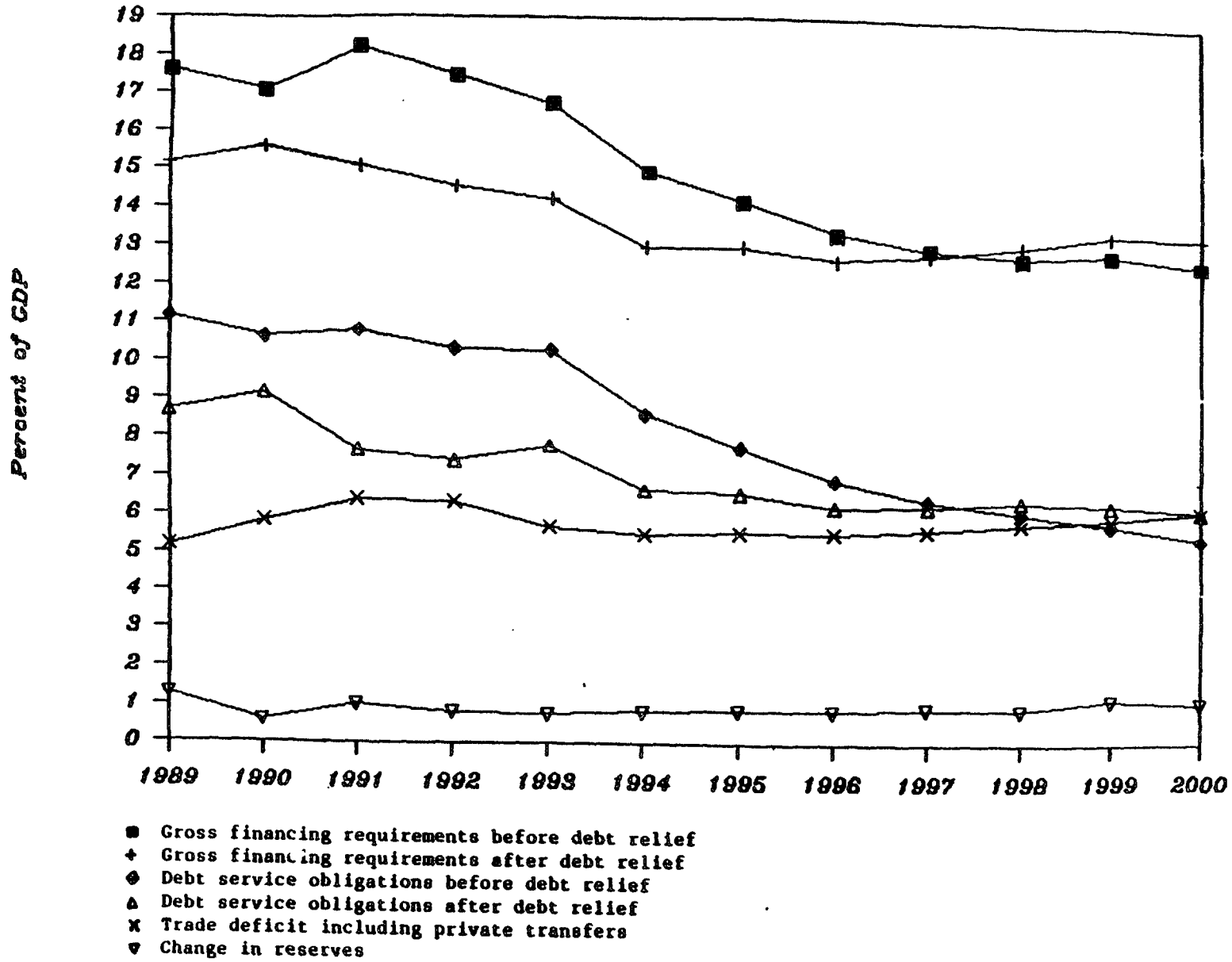
Changes in underlying assumptions and targets will affect the projections, mostly because of changes in the trade balance. A few examples illustrate the range of possible effects. If the GDP growth target were one percentage point higher in each year (which implies that the target proposed in Sub-Saharan Africa: From Crisis to Sustainable Growth would be achieved by 1995) -- and there were no improvement in import efficiency, gross financing requirements would rise by 20-25 percent, or by \$6-7 billion a year on average. If the assumed export growth were one percentage point higher in each year (bringing it closer in line with that of other developing countries) - - and there were no offsetting increases in imports, gross financing requirements would fall by about 15 percent, or some \$4 billion a year on average. If the projected terms of trade index were one percentage point below

the base case scenario in each year, gross financing requirements would rise by about 15 percent, or \$4-5 billion a year on average. And if policy reforms could improve efficiency enough to lower the assumed import elasticity by 10 percent (becoming 0.9 instead of 1.0), gross financing requirements would decline by over 5 percent, or almost \$2 billion a year. 13/

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13/ Changes in interest rates would affect debt service obligations but have only relatively minor impact on overall financing requirements. In 1988, about \$28 billion, or 23 percent, of the region's disbursed and outstanding long-term debt (excluding Angola) had variable interest rates; in addition, the stock of short-term trade credits amounted to about \$8 billion. A rise in interest rates of one percentage point would increase debt service obligations by only \$0.3-0.4 billion a year, or only 1-2 percent of gross financing requirements for the region.

Chart 4  
 Gross Financing Requirements of Sub-Saharan Africa, 1989-2000  
 (Percent of GDP)





Another significant variable affecting these requirements is the price of oil, and the uncertainty caused by the Middle East crisis in the last half of 1990 has increased the likelihood that oil prices will be higher than previously projected. The longer-run impact of higher oil prices on external financing requirements in the coming years depends on the scope for increased energy efficiency in Africa and the impact on OECD growth, import demand, and inflation, as well as on oil prices themselves. Assuming that Sub-Saharan countries continue to accelerate GDP growth to achieve the target proposed in Sub-Saharan Africa: From Crisis to Sustainable Growth by 2000, and that higher oil prices dampen consumer demand and stimulate increased energy efficiency within Africa, each dollar increase in oil prices will raise financing requirements by about \$250 million a year for the oil-importing African countries. About \$150 million of this increased cost would fall on the IDA-only countries. If higher oil prices cause Sub-Saharan Africa's non-oil terms of trade to deteriorate (because of weakened demand for African commodities and rising costs of manufactured imports), the additional financing requirements would be higher. <sup>14/</sup>

The additional cost to the oil-importers would be less than the larger revenues of the five oil-exporting countries. At current export levels (roughly 2 million barrels a day), each dollar increase in oil prices would raise export revenues by \$750 million a year (mainly for the five largest oil-exporting countries). Because the external financing requirements of the oil exporters are a relatively small amount of total Sub-Saharan requirements, however, the reduction in their financing requirements as a result of their higher export revenues would not offset the larger requirements of the other countries caused by higher oil prices.

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<sup>14/</sup> This analysis is based on price and income elasticities calculated for 1973-88 for all Sub-Saharan oil-importing countries in aggregate. On the basis of a simple regression, the price elasticity is equal to about -0.24 and the income elasticity is equal to about 0.74.

## **Sub-regional projections**

The aggregate projections for the region mask divergent trends in the three country groups. Moreover, to the extent that oil exporters have financing surpluses, the aggregate requirements are understated because surpluses in these countries are unlikely to be given or loaned to other African countries.

The IDA-only countries account for over 75 percent of the total gross financing required for the region. Their gross external financing requirements in real terms as well as a percentage of GDP, decline until 1997, but rise afterwards as the trade gap continues to widen and debt obligations increase, although by the end of the decade they remain at lower real levels than in 1991 (see Annex chart 2). The financing requirements for these countries are driven by a widening trade deficit, which more than doubles in current terms during the 1990s, rather than by debt service. Therefore, substantially narrowing the requirements cannot be accomplished by short-term solutions. Because exports cover less than \$3 out of every \$4 of exports in these countries, the export growth rate will have to be a third higher than the import growth rate -- or 8-10 percent a year -- for a sustained period of time to lower the nominal trade gap. Exports would have to grow even faster in terms of trade decline. Provided that policy reforms are effective, and assuming a favorable trade environment in the industrial countries, the trade gap may begin to narrow after the end of the decade if export growth continues to accelerate. The required rates are optimistic, but they have been achieved by successful developing countries.

For the middle-income countries and Nigeria, the situation during the 1990s contrasts sharply with that of the low-income countries. Middle-income countries account for 20 percent of the total

requirements for the region. Their requirements decline during the decade in real terms as well as a percentage of GDP. As opposed to the IDA-only countries, their requirements are not driven by trade (they have a small trade surplus) but by debt service. Debt service obligations rise during the decade as payments for nonconcessional obligations contracted in the second half of the 1980s become due. Debt relief could fill much of the financing gap of this group of countries. If the creditor community granted more generous debt relief than assumed in the model, the need for new financing would be considerably less.

Nigeria needs an average annual gross financing (before debt relief) of \$2.4 billion only from 1991 to 1995. From 1996 onwards Nigeria would generate a surplus. Nigeria's requirements decrease because of both an increasing trade surplus and declining debt service obligations over the decade. After debt relief, Nigeria would need an annual average of only \$1.1 billion in 1991 and 1992, as it generates surplus after that.

### Projected financing sources

For illustrative purposes, prospective sources of financing for these requirements are also shown in Table 7 and Chart 5. The major financing sources, in order of importance, include gross loan disbursements from all lenders, official transfers, debt relief measures (net of additional moratorium debt service) and direct foreign investment. (Private transfers are treated as resources, included in the current account balance.) Gross loan disbursements, net official transfers and direct foreign investment are assumed to grow at annual average nominal growth rates of 3-4, 7 and 10 percent, respectively. Gross disbursements of nonconcessional loans are assumed to remain constant, in nominal prices, at the 1988 level.

The share of gross loan disbursements and official transfers in total financing -- including debt service reduction -- is assumed to rise from 65 to 87 percent by the end of the decade. The share of direct foreign investment is assumed to double during the decade, although because the base is very small its contribution to total requirements remains low (6 percent in 2000). Debt relief, which is assumed at the most favorable terms currently allowed under the Paris Club, would gradually dwindle and become negative by 1998 as repayment of previous debt consolidations fall due. Two other reasons account for the relatively small contribution of debt relief to total financing resources: about a fourth of Africa's debt is multilateral and currently not eligible for debt relief; and all new borrowing is assumed ineligible for rescheduling, which is in line with the current policy on cut-off dates.

**Table 7 Prospective sources of financing for Sub-Saharan Africa, 1991-2000**  
(annual averages in billions of dollars)

	1991-2000	of which	
		1991-95	1996-2000
Gross loan disbursements	12.1	10.8	13.3
of which concessional	7.2	6.1	8.3
Official transfers	10.0	8.4	11.6
Direct foreign investment	1.5	1.1	1.9
Debt relief a/	1.7	3.9	-0.4
Residual gap	2.9	3.3	2.5
Total financing	28.2	27.5	28.9

Source: World Bank projections

a/ Net of moratorium debt service on rescheduled debt.

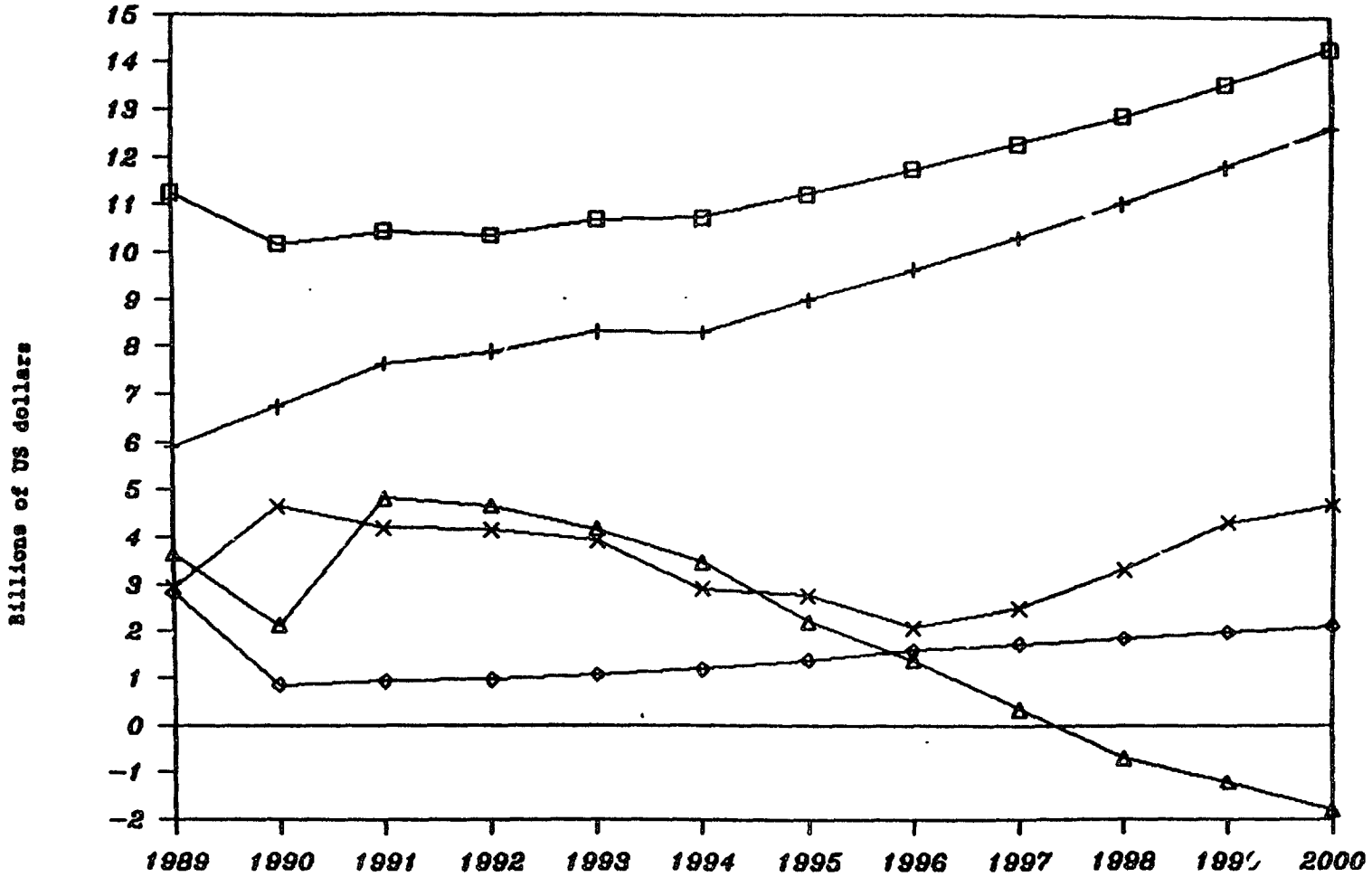
Under this scenario, only about 90 percent of the requirements would be met, indicating the need for stronger reforms, export promotion, more efficient use of imports, and additional resources - namely more favorable debt relief and larger capital inflows, especially from the private sector.

The purpose of this paper is to discuss the magnitude of external resources that Sub-Saharan Africa may require during the 1990s, and not the likelihood of obtaining those resources. However, the figures presented in this paper for the various financing components are in line with magnitudes projected by other papers prepared for the World Bank Symposium on African External Finance in the 1990s, whose purpose was to indicate the prospects for external financing from various sources.

### **Methodological summary**

The financing requirements of Sub-Saharan Africa were projected in nominal US dollars using a macroeconomic accounting framework covering basic relationships among aggregates of the macroeconomy. (Details are given in the Annex.) The target rates of real GDP and export volume growth (about 5 percent a year) were assumed to be achieved gradually during the 1990s, accelerating from the lower levels of the late 1980s. Import volumes were set by an elasticity of one, relative to real GDP growth, which is higher than aggregate elasticity manifested in the 1980s,

Chart 5  
 Financing by Source in Sub-Saharan Africa, 1989-2000  
 (Billions of US dollars)



- ◻ Loan disbursements
- + Official transfers
- ◊ Direct foreign investment
- ▲ Debt relief
- x Residual gap

when insufficient foreign exchange constrained imports. <sup>15/</sup> On the other hand, the future import elasticity may be expected to exceed one, because of the severe compression of imports during the 1980s (import volume in 1988 was only 76 percent of the level in 1980), because of the need to rebuild critical infrastructure and productive facilities, and because of the need to expand basic social services. Moreover, import intensity normally deepens as economies grow and develop.

The assumed international environment would be moderately expansive (3 percent growth in OECD countries during the 1990s). Because of rising real oil prices (as projected before the current Middle East crisis), terms of trade would be generally favorable for the region overall, but oil importers would face slightly declining terms of trade.

Policy reforms are not explicitly included in the model, although achieving the targets projected for key economic variables assumes the adoption of conducive policies, as discussed in the previous section. (Real depreciation of domestic currencies is explicitly assumed (about 3 percent a year) because it effects how domestic prices move relative to international prices, and thus affects ratios expressed as a percentage of domestic GDP.

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<sup>15/</sup> In this paper, the import elasticity is analogous to factor coefficients in a supply function -- which means that a certain quantity of imported intermediate and capital goods is needed to sustain a related volume of GDP growth. In reality, the volume of capital and intermediate imports will also be affected by changes in relative prices, including exchange rates, because some flexibility exists in production structures.

However, about half of the region's imports are consumer goods, which means that the volume of imports will also be affected by changes in consumption (caused by changes in national income and prices) as well as by changes in output. Because some of these consumer goods are financed directly by foreign transfers and loans changes in total import levels will also reflect access to external financing, which raise national income.

Keeping the import elasticity at one during the entire decade may require significant shifts in the composition of imports (from consumer to producer goods), especially in the effort to raise investment levels and improve capital efficiency.

Financing requirements are calculated as the sum of the trade gap (that is, the difference between projected exports and imports of goods and services, except interest obligations on external debt), debt service obligations (including interest on short-term debt and obligations to the IMF), and a target increase in foreign reserves.

The relationship between the amount of investment required and the projected growth rates, generally referred to as incremental capital-output ratio (ICOR), is assumed to improve during the decade, with the ICOR declining from 6.8 in 1985-88 to 4.8 in 2000 for the region as a whole. <sup>16/</sup> Substantial changes in the ICOR would be needed for the middle-income countries and Nigeria as the ratio is brought down from its present level to meet the target GDP and investment levels. This change assumes the implementation of policy reform programs that increase the efficiency of capital. No improvement of the ICOR is projected for the IDA-only countries because their efficiency of capital already appears very high, in part because of the recent growth resulting from the implementation of reform programs and higher aid in the late 1980s. However, these countries must continue to maintain adequate policies if this efficiency is to be sustained as investment levels are increased and focused more on infrastructure and human resource development.

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<sup>16/</sup> In the model the single-year ICOR is calculated using the following formula:  $GDI^{t-1} / (GDP^t - GDP^{t-1})$ , using prices in t-1. The multi-year ICOR for 1985-88 is calculated on the basis of total investment in 1985-87 and the change in GDP between 1985 and 1988, using 1988 prices.



## **Annex**

### **The framework and assumptions for the projections**

This annex describes both the general assumptions used in the projections and those specific to each of the country groups. The first section describes the projections framework and basic assumptions, which apply to all groups. The subsequent sections discuss the specific assumptions and the base-case scenario for each group, as well as the sensitivity of the results to changes in major assumptions. The analysis is in current and constant prices, expressed in US dollars.

#### **The projections framework**

Aid requirements were projected using an accounting framework. A set of equations covers basic relationships among aggregates of national accounts, trade flows, the balance of payments, government finance, indebtedness and the growth of population. Key parameters have been set in line with the broad objectives of reform programs. The estimates are driven by three basic assumptions: growth of aggregate GDP (with no explicit sectoral analysis), growth of total exports, and overall import requirements for growth as a function of the import elasticity. The ratio of investment to GDP determines the level of domestic consumption, when account is taken of the projected resource gap representing the balance of external trade. Domestic saving is a residual -- the difference between GDP and consumption.

Continuing policy reforms are implicit in the projections, as their impact on performance is not modeled directly. However, an assumed change in the real exchange rate affects the relative level of domestic prices, measured in US dollars, which influences results in current prices. <sup>1/</sup> Assumed changes in government revenue and spending also affect the shares of private consumption and saving.

Financing requirements are projected using aggregate data for each group of countries, which allows for the probability that some countries will do better than the average and some worse. Any country individually may differ from the "average" assumptions, and its requirements may differ from its prorata share of the total for the group.

#### **Basic assumptions**

The basic targets and assumptions are similar to those in the World Bank's recent publication Sub-Saharan Africa: From Crisis to Sustainable Growth. For the region as a whole, that report assumed real GDP growth during the 1990s of 4-5 percent a year, annual export volume growth of over 5 percent, an import elasticity falling to about 1.1 by 2000, investment rising to 25 percent of GDP, and an incremental capital output ratio declining from about 7 in 1990 to 5 by 2000.

These targets are more optimistic than historical trends for Sub-Saharan Africa overall, but they are consistent with the historical experience of successful countries in and out of Africa and with recent improvements in reforming countries. For example, during 1965-88, Kenya achieved a GDP

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<sup>1/</sup> For example, real depreciation may cause the ratio of imports to GDP in current prices to rise, assuming no offsetting fall in the volume of imports.

growth rate of 5.7 percent a year, with an investment rate of 25 percent of GDP and an ICOR of 4.4. However, in most cases, the targets and assumptions are less optimistic than recent or projected results for developing countries in general. For example, exports from all developing countries are expected to grow at over 6 percent a year during the 1990s.

These projections use an import elasticity of one, which represents an improvement on recent experience of many countries, although historical values are lower for some periods and countries. Between 1967-74, a period of relatively good economic growth, the import elasticity was only 0.4 for the region, while GDP growth (excluding Nigeria) was 4.4 percent a year. During the 1980s, a period of especially low growth, the elasticity was negative for African countries overall, including the IDA-only countries as a group. For the 20 core countries that receive import support through the Special Program of Assistance, the import elasticity is estimated at 0.8 for 1988-90, a period when annual GDP growth exceeded 4 percent. In contrast, the elasticity was 1.3 in 1975-80, while annual GDP growth was less than 2.4 percent. However, the assumed value may be justified because of the severe import compression in 1982-1986; by 1988, the volume of imports into Sub-Saharan countries was only 3 percent higher than before the first oil shock.

For the 20 core countries that received import support through the Special Program of Assistance, the import elasticity is estimated at 0.8 for 1988-90, a period when annual GDP growth exceeded 4 percent.

In addition, reserves are targeted to rise gradually to an equivalent of three months of imports by 2000 to support policies to liberalize foreign trade and exchange arrangements. By 1988, reserves

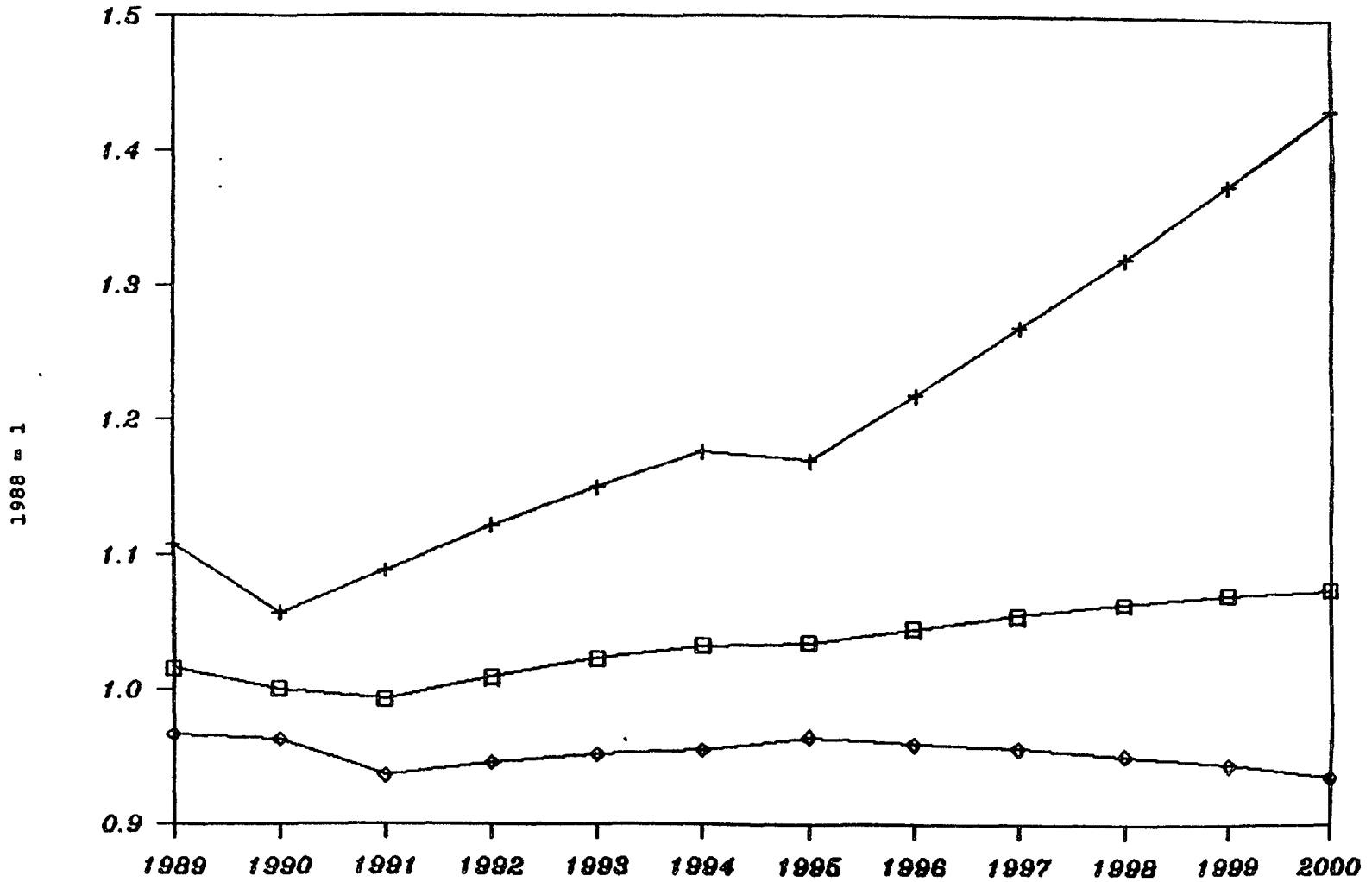
for all Sub-Saharan countries were equivalent to less than 1.5 months of imports and only slightly higher for the IDA-only countries.

Prospects for the world economy are similar to those developed by the Bank for the World Development Report 1990. The "most likely" scenario assumes industrial countries will grow at 3 percent a year during the 1990s. Compared to 1988-90, the terms of trade index for Sub-Saharan Africa (excluding Nigeria) is projected to increase slightly during the 1990s, and to improve for Nigeria by almost 40 percent over the period. For IDA-only countries, however, the terms-of-trade index will remain below its level in 1988-90, declining slightly over the decade. Underlying this scenario is an assumed gradual depreciation of the US dollar, especially in the latter part of the 1990s (from 0.78 SDR/US\$ in 1989 to 0.67 SDR/US\$ by 2000).

Projecting aid flows to sub-Saharan Africa is made more difficult by discrepancies among different historical series. As the projections must be consistent with other elements of the balance of payments and national accounts, the ODA levels used as the base for projections are generally consistent with the balance of payments of the recipients. These levels are usually lower than those reported to the DAC by donors, which often include items that do not appear in the

Annex chart 1  
 Sub-Saharan Africa: Terms of trade index, 1989-2000  
 (1988 = 1)

56



- Sub-Saharan Africa
- + Oil-exporting countries of sub-Saharan Africa
- ◊ Non-oil exporting countries of sub-Saharan Africa

balance of payments. 2/ Even within a given amount of projected aid, there could be substantial shifts among regions and countries, and between project financing and general import support. Emergency requirements (which are not assumed in the projections) could further alter outcomes. These projections incorporate recent decisions on the ninth replenishment of IDA and the fourth Lome Convention, as well as the prognosis for bilateral aid in the OECD's 1989 report, Development Co-operation in the 1990s.

Bilateral ODA is assumed to grow in line with nominal GNP in the OECD countries (about 7-8 percent a year, in US dollars), with the share going to sub-Saharan Africa remaining constant at recent levels (about 32 percent in 1988, including unallocated disbursements and administrative costs), which would be a leveling off of the steady increase in Africa's share of worldwide ODA in the 1980s (since 1985, the region's share has increased by a tenth). The allocation within Africa is implicitly assumed to remain fairly similar to the current pattern.

IDA lending has been based on current lending programs through the end of IDA9. It represents about 47 percent of total IDA, including replenishments and reflows from earlier IDA

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2/ Discussions of aid flows are complicated by definitional and methodological questions and by sometimes large differences among various data sources. Generally in this paper, aid is defined as gross disbursements received by individual countries, which are recorded in the recipient countries' balance of payments. Aid flows based on balance of payments data usually differ from those based on DAC reports, which are based on donors' reports, including "off-shore" expenditures that may not enter a recipient's balance of payments. Series in constant prices are calculated using import prices, which shows the real value of aid to the recipient. The DAC secretariat deflates by the GNP dollar deflator of OECD countries, which shows the value of the aid to the donor. With the latter approach, the increase in the net ODA to Sub-Saharan Africa was about 5 percent in real terms in 1988. The share of ODA going to Sub-Saharan Africa depends on the treatment of unallocated aid. For example, the region's share (excluding overseas departments and territories) was either 30 or 35 percent depending on whether unspecified aid, which is largely the donors' administrative costs, is excluded or included from the worldwide total. However, regardless of the series chosen, the region's share of worldwide aid has steadily increased.

credits. Taken together, these allocations mean that the region will receive a slightly smaller share of IDA commitments during IDA9 than during IDA8, but in real terms the level will be about the same.

All IDA-only countries currently without ESAFs are assumed to reach agreement on one (at a notional 150 percent of quota) in the early 1990s. Taking account of assumed new commitments for ESAFs, uncommitted funds remaining in the SAF and ESAF for worldwide use would amount to about SDR 3.8 billion. No other access to IMF resources has been projected, although it is likely that some countries may eventually have Standby or other arrangements during the 1990s.

Aid from the Commission of European Communities (CEC) has been projected (through 1993) taking into account changes negotiated in Lome4. In real terms (when deflated by Africa's import prices), the value of Lome4 is 23 percent larger than Lome3 and commitments should disburse more quickly, given the larger share of STABEX, the creation of a structural adjustment facility, and the possibility of using a share of the indicative programs for quick-disbursing assistance to support adjustment. Lending from the African Development Fund, which accounts for three percent of ODA to the region, is assumed to grow in line with bilateral aid; its actual growth will depend on its fifth replenishment in 1991.

After 1993, total multilateral aid is assumed to grow at the same rate as bilateral aid, except for the IMF.

In addition to aid, some inflows of other capital are assumed, including private investment and transfers, limited nonconcessional borrowing, and additional short-term credit. Short-term borrowing

to facilitate trade is assumed to rise with nominal import growth (for the SPA countries, for example, short-term trade credits now represents about 15 percent of the annual import bill).

Debt service obligations are projected on the basis of disbursed commitments at the end of 1988 (which were the most recent data reported by debtors through the World Bank's Debtor Reporting System) plus projected new disbursements (from both existing and expected additional commitments) after 1988. The obligations cover all debt, including commercial bank debt, the IMF, and short-term trade credits. Debt service obligations include moratorium interest and amortization due on all official rescheduling arrangements agreed or expected to be agreed through 1990. (Debt service obligations on subsequent reschedulings are subtracted from debt relief resulting from these reschedulings, which is shown on a net basis.) Arrears to official bilateral creditors are assumed to be rescheduled.

Debt relief results from forgiveness and rescheduling of official bilateral loans (both direct and guaranteed) and from rescheduling or other reduction of private debt. <sup>3/</sup> Official concessional debt owed to Paris Club creditors is assumed to be mostly cancelled in line with existing donor programs (reducing obligations on this debt by about three-quarters); debt service on the remaining concessional debt is assumed to be partly rescheduled (three-fifths) and partly paid (two-fifths), reflecting in part the practice of some donors of providing special grants in lieu of forgiveness. Other bilateral concessional debt is assumed to be rescheduled in countries with any Paris Club arrangement. Rescheduling would be on concessional terms (25 years maturity with 14 years grace and interest no higher than the original loans).

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<sup>3/</sup> Private debt consists of medium- and long-term loans owed to commercial creditors by, or with the guarantee of, the debtor government, but which are not otherwise guaranteed, collateralized, or secured by creditor governments, by other third parties, or by assets.



Rescheduling of official bilateral debt is assumed to continue broadly in line with recent agreements with Paris Club and other creditors. With some exceptions noted below, countries are assumed to reschedule annually (either through yearly meetings of the Paris Club or within some multi-year framework). There would be no change in the cut-off dates in each country, and consolidation of previously rescheduled debt would continue only where this is already established practice. As a result, debt service obligations on obligations rescheduled under the Toronto options would not be rescheduled again. Obligations arising from any new borrowings after the cutoff date are considered ineligible for rescheduling, although for the IDA-only countries, most of these will already be largely on highly concessional terms. In addition to rescheduling through the London Club, some reduction of commercial debt is assumed, through some combination of buybacks at deep discounts, swaps and other arrangements.

#### IDA-only countries

In line with the targets of the long term strategy, annual growth of aggregate GDP for the group would rise from 3.3 percent in 1985-88 to 4.3 percent in 1995, reaching 5 percent by 2000. Imports would grow at a slightly faster pace (0.1-0.2 percentage points) than GDP. Annual growth of aggregate exports for the group would be higher than GDP growth, averaging 5 percent during the 1990s, which is 1.5 percentage points above the 1985-88 rate. Gross domestic investment would be expected to rise steadily from 15 percent of GDP to 25 percent by 2000, which would result in an implicit ICOR (in constant prices) of 4.5 in 1995 and 4.8 in 2000.

The assumptions lead to an increasing openness, in line with assumed trade liberalization measures and continued real currency depreciation. Imports (of goods and nonfactor services) rise from 26 percent of GDP in 1985-88 to over a third of GDP in 1995 and to over 40 percent of GDP by 2000. Exports rise as well, from less than a fifth of GDP in the late 1980s to 28 percent by 2000. These assumptions are consistent with the historical experience of successful developing countries. The volume of exports from all low and middle income countries grew at 6.2 percent a year during 1980-88. 4/ For many countries, the share of exports in GDP is already greater than a third (for example, in 1987, it was 64 percent in Malaysia, 45 percent in Korea, 34 percent in Cote d'Ivoire and Chile, and 30 percent in Thailand).

Import prices are expected to rise faster than export prices (4.8 percent a year over 1988-90 levels; compared with 4.2 percent for exports), resulting in a 0.6 percent deterioration a year in the terms of trade over the entire decade.

Financing and debt relief for 1988-90, which constitute the base for projecting levels in the 1990s, were calculated for two subgroups: the SPA countries and other IDA-only countries. In the SPA countries, this base represents results expected under SPA1. In the group of other IDA-only countries, the volume of capital inflows was assumed to continue the flat trend of 1985-88, and debt service payments were assumed to remain at 1988 levels with further accumulation of arrears in 1989-90.

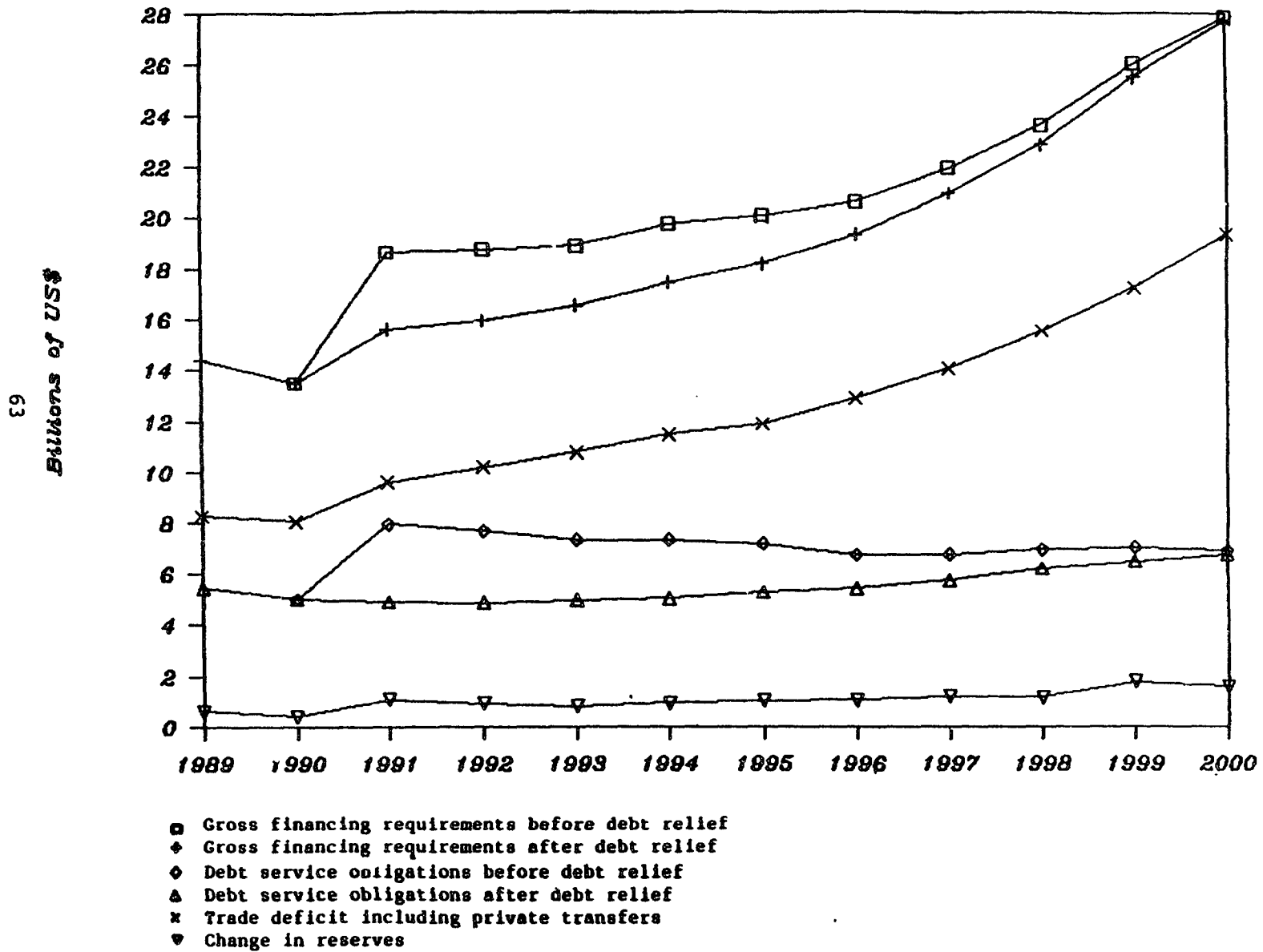
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4/ Some of the better performers include: Botswana, 20.2 percent a year; Korea, 13.2 percent; Thailand, 11.6 percent; Mauritius, 9.6 percent; Malaysia, 9.5 percent; and Zimbabwe, 6.2 percent.

The growth rate of ODA from all sources, in constant OECD prices and exchange rates, would decline from about 4.2 percent a year in 1988-90 to an average of 1.9 percent a year in 1991-2000, reflecting the large pipeline of commitments in the late 1980s and normative assumptions about new aid flows in the 1990s, from various donors, as described above. ODA accounts for all but about a tenth of gross external financing, with an overall grant element of about 90 percent (three-fifths of ODA is assumed to be outright grants). All World Bank and IMF financing would be concessional. The results also indicate, however, a deepening dependence on external financing. As a share of GDP, ODA rises from less than 11 percent in 1985-88 to over 14 percent throughout the 1990s. The bulk of this foreign capital would finance investment.

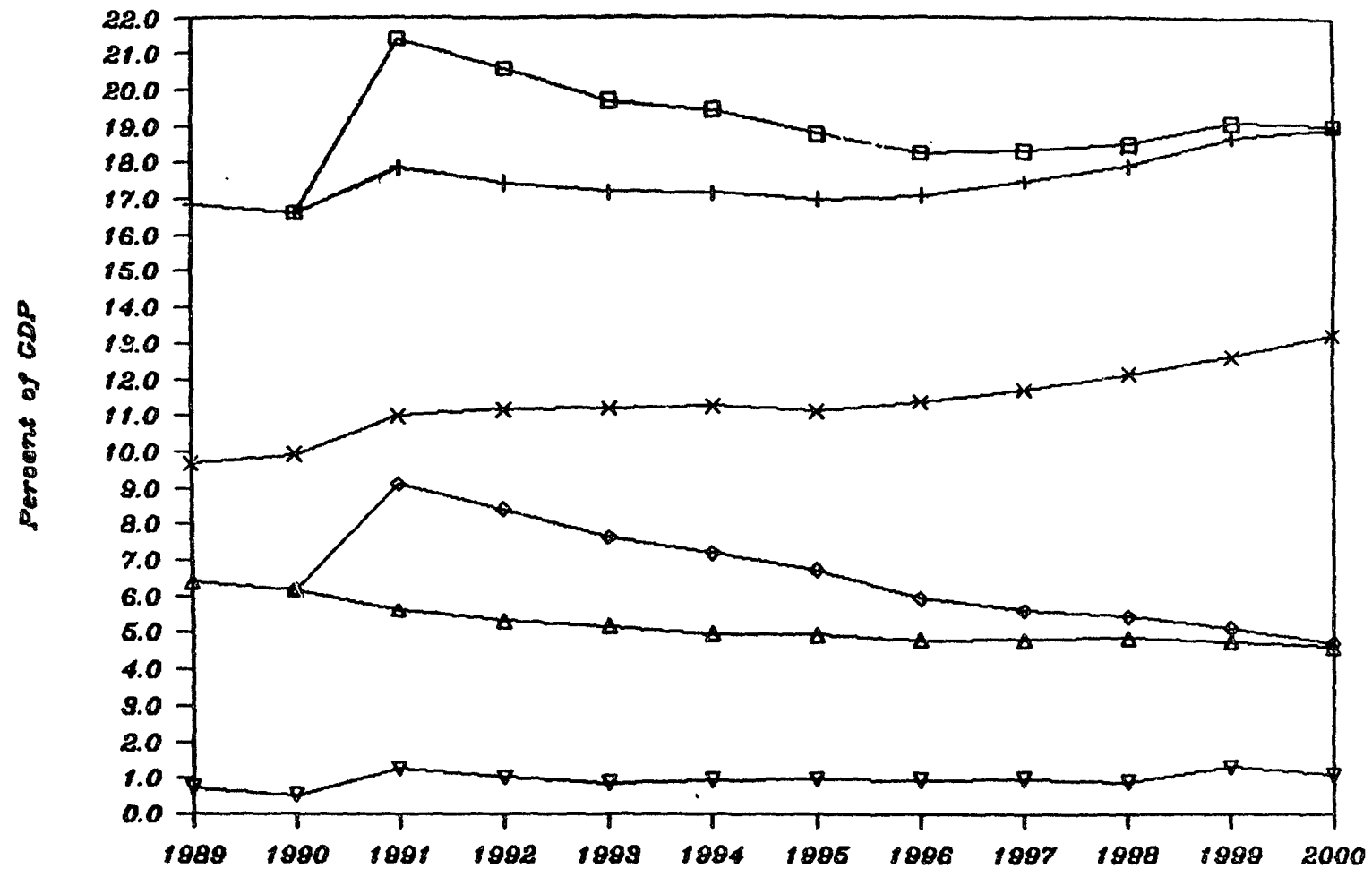
An improved investment climate, including market liberalization and better public sector support, is expected to increase direct foreign investment by about 5 percent a year in the 1990s. Even with this change the contribution of this source remains marginal. Disbursements from new nonconcessional loans are expected to remain constant in nominal prices at \$1 billion a year throughout the decade. Short-term credits for trade financing are projected to grow about half as fast as the value of imports.

Annex chart 2  
 IDA-only countries: Gross financing requirements, 1989-2000  
 (Billions of US dollars)



Annex chart 3  
 IDA-only countries: Gross financing requirements, 1989-2000  
 (Percent of GDP)

64



- Gross financing requirements before debt relief
- + Gross financing requirements after debt relief
- ◇ Debt service obligations before debt relief
- △ Debt service obligations after debt relief
- x Trade deficit including private transfers
- ▽ Change in reserves

Regarding debt relief, most ODA loans are assumed to be cancelled, but some would be rescheduled and a few paid, as explained above. Nonconcessional bilateral debt would be rescheduled during the 1990s on Toronto terms, in line with established patterns. <sup>5/</sup> Debt service payments on existing medium and long-term commercial bank debt owed or guaranteed by recipient governments are assumed to correspond to recent trends (only some countries service a portion of this debt).

Policy reforms are assumed to continue, including a steady real exchange rate depreciation of 3.4 percent a year and a gradual (two percentage points between 1988 and 2000) increase in government revenues and decrease in government expenditures.

For the 29 IDA-only countries, the assumed domestic growth, changes in terms of trade, and debt relief lead to a rising real level of gross national income. On a per capita basis, gross national income would rise at 1 percent a year in 1991-95 and at about 1.6 percent a year for the rest of the decade. In 1988 dollars, however, gross national income would only be about \$253 a person in 1991-95, an increase of only 1.5 percent over its level in 1985-90. Consumption per capita would barely rise in 1991-95 (as it did in 1984-88) but would grow at over 1 percent year for the rest of the decade. The private share of GDP would remain about the same over the period.

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<sup>5/</sup> Most countries are assumed to reschedule obligations on debt contracted before the cutoff date and on previously rescheduled debt that has already been included in Paris Club agreements. For Burundi, the Gambia and Ghana, no rescheduling is assumed because their bilateral nonconcessional debt is small and the gains from Paris Club rescheduling would be small. For Kenya, to protect its access to limited commercial borrowing, no rescheduling is assumed. In practice, some other countries, notably Chad and Malawi, may not reschedule because further gains would be small; however, for this reason, there would be no appreciable change in projected aggregate debt relief.

**Annex table 1 IDA-only countries: Key economic indicators, 1985-88, 1995, 2000**  
(average annual percentage change unless otherwise indicated otherwise)

	1985-88	1995	2000
<b>Domestic indicators</b>			
Real gross domestic product (GDP)	3.3	4.3	5.0
Real gross domestic investment (GDI)	4.9	9.4	5.8
GDI (percent of GDP)	15.1	20.5	25.0
Gross domestic savings (Percent of GDP)	7.6	9.7	11.9
Real consumption per capita	0.1	0.1	1.4
Real gross national income (GNY)	3.4	4.7	4.9
Real GNY per capita (1988 US\$)	248.0	259.0	280.0
Real effective exchange rate	..	-3.4	-3.4
ICOR (1988, 1994, 1999 prices respectively)	4.5	4.5	4.8
<b>Trade indicators and official development assistance</b>			
Import elasticity	1.3	1.0	1.0
Import volume	4.4	4.4	5.0
Imports (percent of GDP)	25.8	34.2	41.1
Export volume	3.5	4.8	5.9
Exports (percent of GDP)	18.2	23.4	28.0
Import prices	3.4	4.6	6.1
Export prices	1.6	6.0	4.8
Terms of trade index (1988=100)	96.7	95.7	92.3
Real gross ODA	12.6	3.3	1.0
Gross ODA (percent of GDP)	10.8	14.2	14.6
<b>Debt service indicators before debt relief</b>			
Debt service ratio (percent of exports)	..	27.8	16.2
Debt service (percent of GDP)	..	6.7	4.7

Sources: World Bank data and projections.

**Annex table 2 IDA-only countries: Financing and debt relief, 1985-88, 1995, 2000**  
 (average annual percent of GDP unless otherwise indicated)

	1985-88	1995	2000
Total foreign financing required			
US\$ billion	10.0	20.1	27.8
percent of GDP	13.5	18.8	19.0
Gross inflows	13.4	15.7	15.9
Net debt relief	-	1.8	0.1
Residual financing gap	0.1	1.3	3.0
<b>Memo items:</b>			
Debt service indicators <u>after</u> debt relief			
Debt service ratio (percent of exports)	28.6	20.4	15.8
Debt service	5.3	4.9	4.6

Sources: World Bank data and projections.



## **Nigeria**

The size of Nigeria's economy and the large share of oil in its export receipts justify discussing its financing needs separately from other countries of Sub-Saharan Africa.

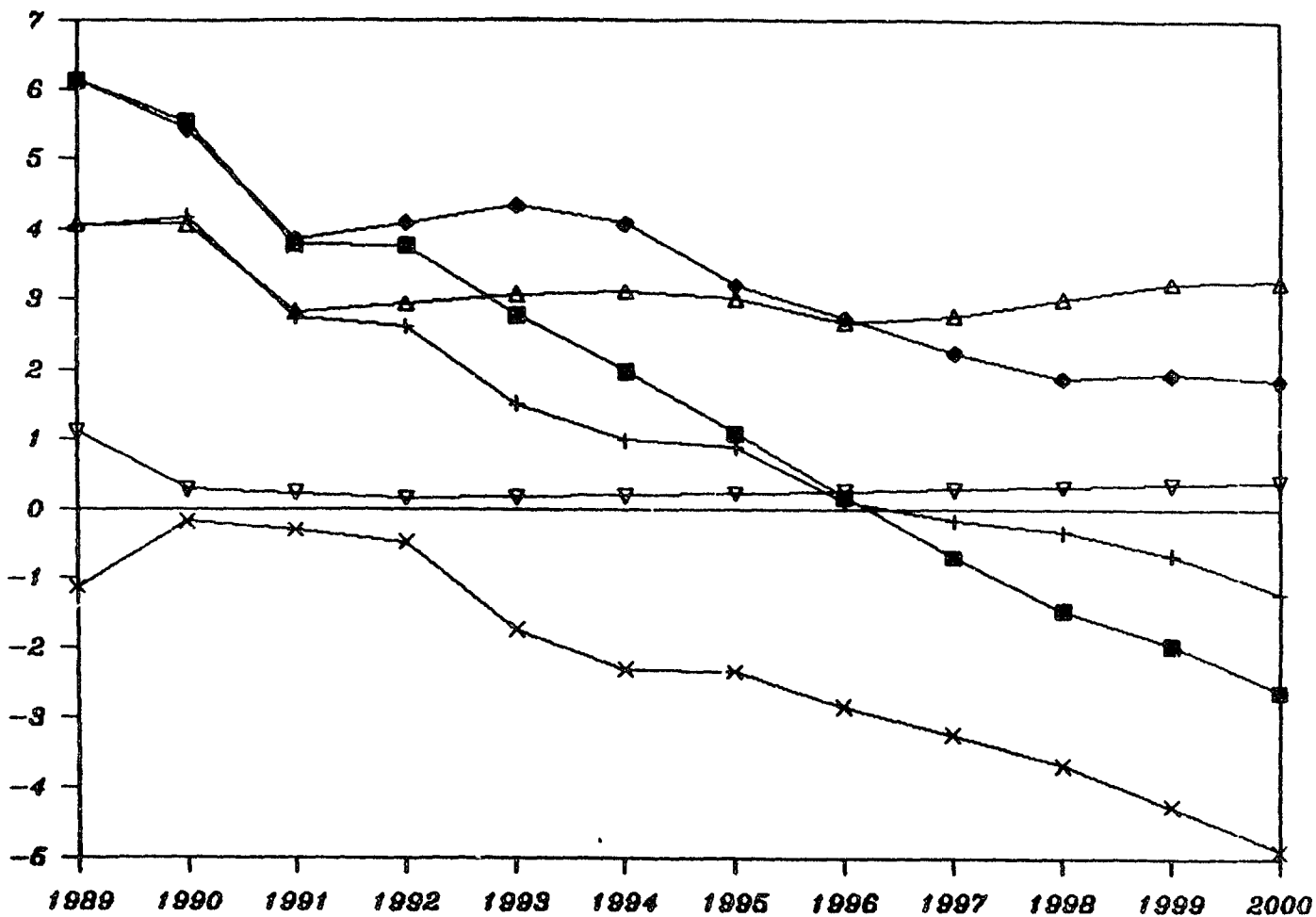
Growth of production would gradually accelerate from 1.9 percent a year in 1985-1988 to 3.9 percent in 1995 and 5 percent in 2000. Export growth is projected to be much lower, however - - at 2 percent a year, because growth in the volume of oil exports is expected to be limited by diminishing reserves and growing domestic demand. The volume of imports would grow at the same rate as output in the 1990s, because of the assumed import elasticity of one.

Import prices are projected to rise at a considerably slower rate (4.2 percent a year between 1988 and 2000) than export prices (7.5 percent a year for the same period), reflecting the expected rise in oil prices (as projected before the Middle East crisis). The large improvement in the second half of the decade, would offset the faster growth of imports, and the small initial trade surplus would grow.

Investment as a share of GDP would almost double by 1995 (from 11 percent in 1985-88 to about 20 percent) and reach 25 percent in 2000, and over half of this may be private. Efficiency of the new capital would also double by 1995 and then remain constant in 1996-2000.

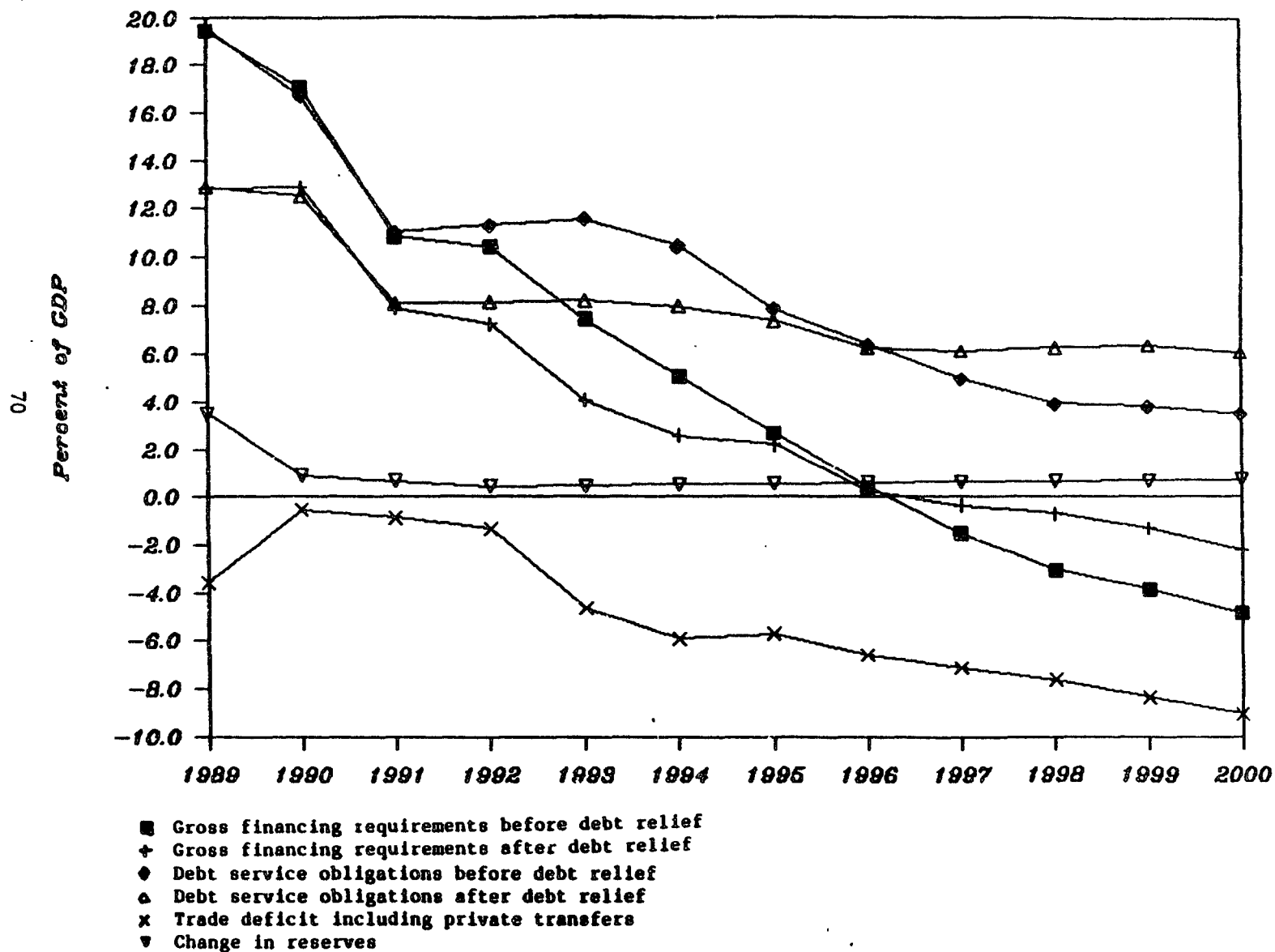
Annex chart 4  
 Nigeria: Gross financing requirements, 1989-2000  
 (Billions of US dollars)

Billions of US\$



- Gross financing requirements before debt relief
- ⊕ Gross financing requirements after debt relief
- ◆ Debt service obligations before debt relief
- △ Debt service obligations after debt relief
- × Trade deficit including private transfers
- ▽ Change in reserves

Annex chart 5  
 Nigeria: Gross financing requirements, 1989-2000  
 (Percent of GDP)



The outcome from the initial conditions and normative targets would be a surplus in the balance of goods and non-factor services. Thus external financing is required to cover the deficit on the services account, including interest obligations, loan amortization obligations, and the net outflow of private transfer until they vanish by 2000. Assumptions for concessional and nonconcessional capital flows are the same as for the IDA-only countries.

Debt service obligations on official non-concessional bilateral debt are assumed to be rescheduled on Toronto terms from 1991 (assuming equal shares of debt are covered by the three options).

**Annex table 3 Nigeria: Key economic indicators, 1985-88, 1995, 2000**  
(average annual percentage change unless otherwise indicated)

	1985-88	1995	2000
<b>Domestic indicators</b>			
Real gross domestic product (GDP)	1.9	3.9	5.0
Real gross domestic investment (GDI)	-24.4	9.4	11.1
GDI (percent of GDP)	10.6	19.9	25.0
Gross domestic savings (Percent of GDP)	12.8	27.3	34.7
Real consumption per capita	-3.3	-0.1	1.1
Real gross national income (GNY)	-9.2	3.9	6.5
Real GNY per capita (1988 US\$)	296.0	274.0	318.0
Real effective exchange rate	..	-3.0	-3.0
ICOR (1988, 1994, 1999 prices respectively)	9.6	4.8	4.8
<b>Trade indicators and official development assistance</b>			
Import elasticity	-10.2	1.0	1.0
Import volume	-19.0	3.9	5.0
Imports (percent of GDP)	18.7	33.4	38.9
Export volume	2.4	2.7	0.8
Exports (percent of GDP)	21.0	40.8	48.6
Import prices	8.6	3.9	4.1
Export prices	-15.5	3.4	8.9
Terms of trade index (1988=100)	146.5	117.2	146.2
Real gross ODA	18.0	4.0	2.9
Gross ODA (percent of GDP)	0.0	0.4	0.5
<b>Debt service indicators before debt relief</b>			
Debt service ratio (percent of exports)	..	19.4	7.2
Debt service (percent of GDP)	..	7.8	3.5

Sources: World Bank data and projections.

**Annex table 4 Nigeria: Financing and debt relief, 1985-88, 1995, 2000**  
(average annual percent of GDP, unless otherwise indicated)

	1985-88	1995	2000
<b>Total foreign financing required</b>			
US\$ billion	1.1	1.1	-2.6
percent of GDP	3.7	2.7	-4.9
Gross inflows	5.1	4.6	4.6
Net debt relief	..	0.5	-2.6
Residual financing gap	-1.5 a/	-2.4	-6.9
<b>Memo items:</b>			
Debt service indicators <u>after</u> debt relief			
Debt service ratio (percent of exports)	25.7	18.2	12.6
Debt service	5.1	7.4	6.1

a/ Including statistical discrepancy.

Sources: World Bank data and projections.

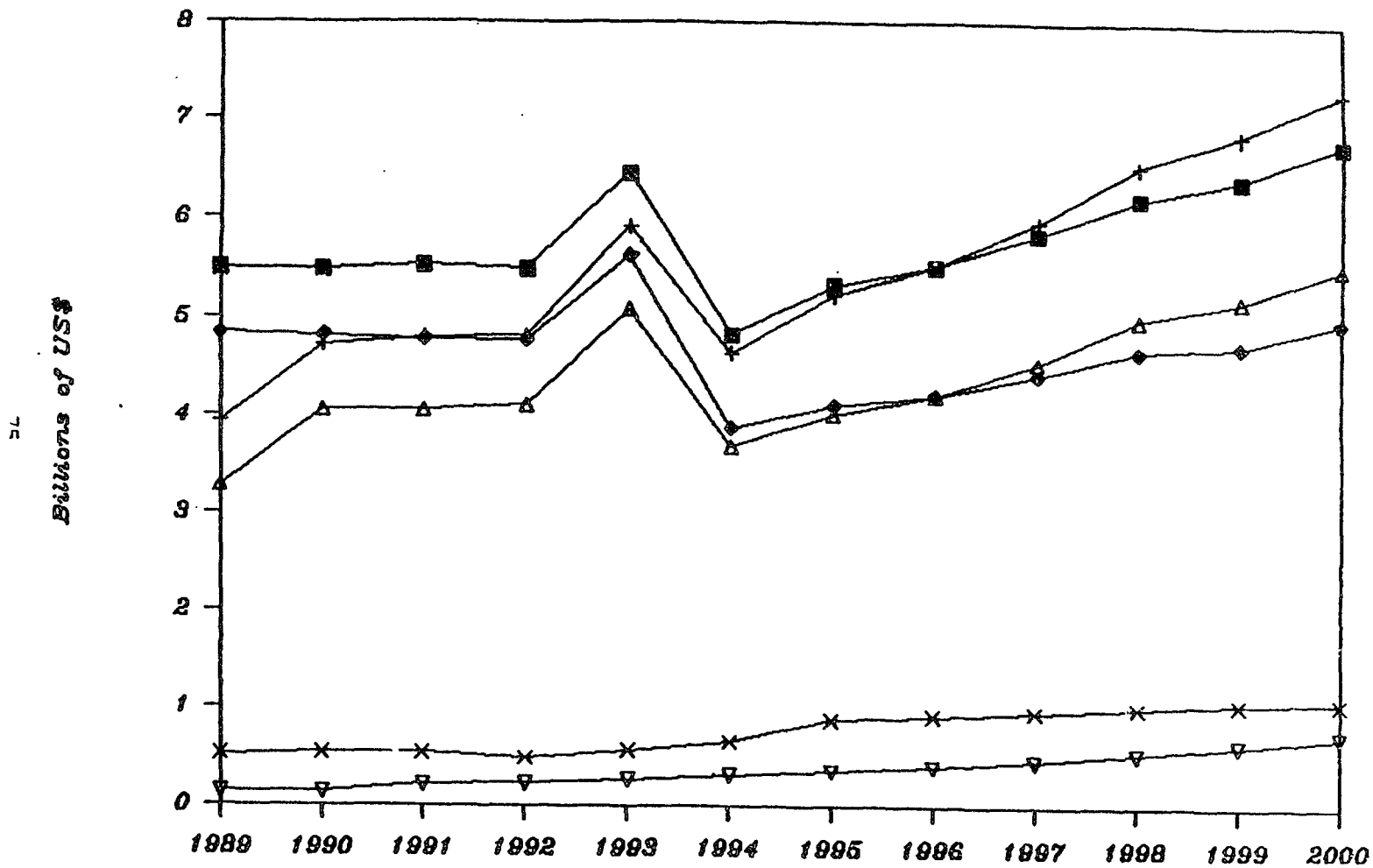
#### Selected IBRD borrowers

Projections for this group are based on data for four countries: Cameroon, Congo, Cote d'Ivoire and Zimbabwe. Other middle-income countries were not considered because they are too small to affect the results (Seychelles and Swaziland) or are not expected to need special balance-of-payments support (Botswana, Gabon and Mauritius). Because these countries have fairly different economies, each was analyzed separately. In the case of Cameroon and the Congo, oil and non-oil exports were projected separately, with limits on oil production based on known deposits and reasonable capacity utilization.

The GDP of this group of countries grew more slowly in 1985-1988 (1.4 percent a year) than for the other groups of countries, largely because of increasingly damaging policy distortions, but they

are assumed to reach the same target growth rate by 2000 as other groups of countries. The economies of these countries are more open than those of the other groups (exports and imports to GDP were above 30 and 26 percent, respectively, in 1985-1988), and their export structure is more diversified. Given an import elasticity of one, total imports are assumed to grow faster than exports. The share of both exports and imports to GDP would increase gradually, but the share of net exports would narrow from 4 per cent in 1985-1988 to 2.5 percent in 1995 and 2.3 percent in 2000 because of slow increase in the exports of crude oil.

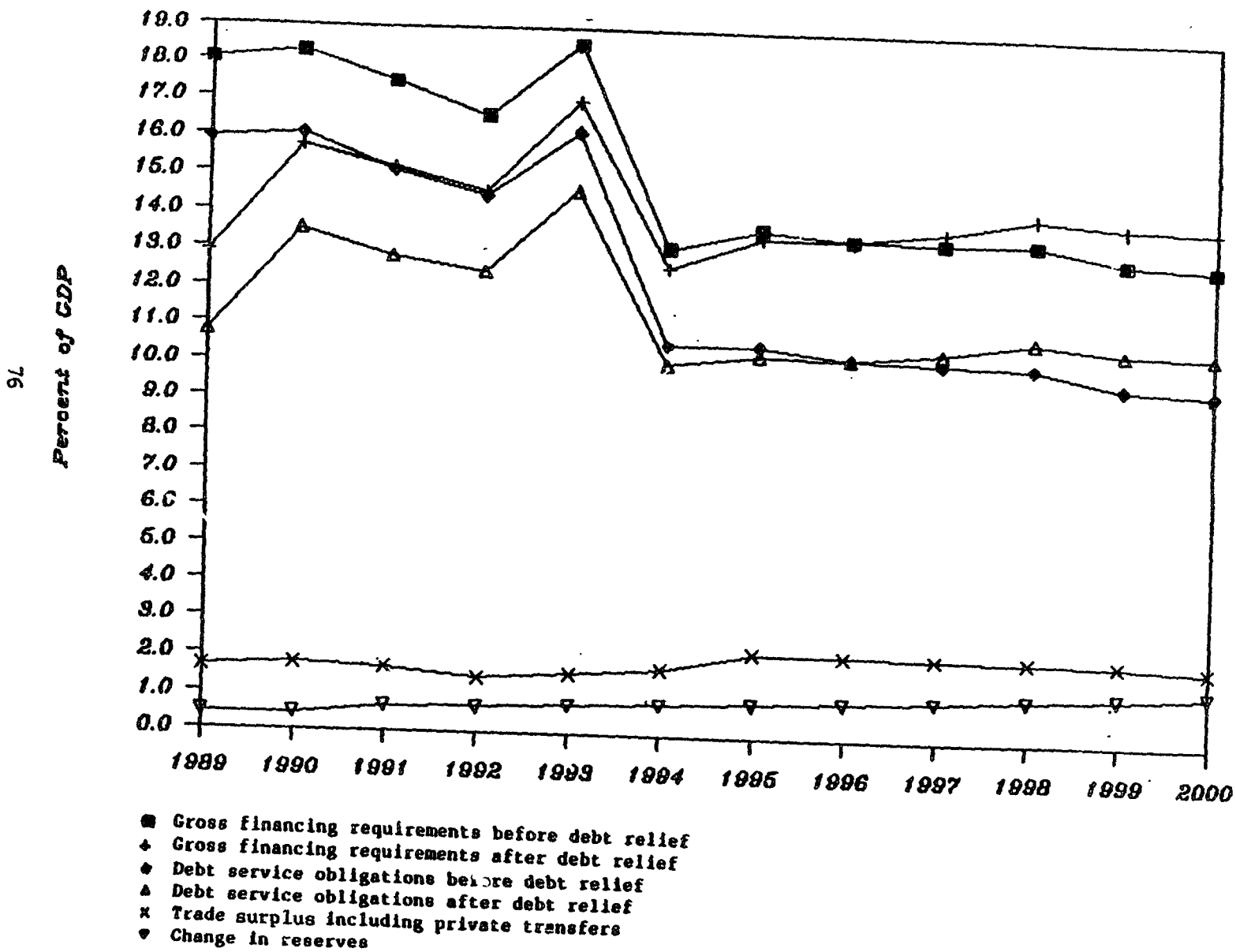
Annex chart 6  
 Selected IBRD borrowers: Gross financing requirements, 1989-2000  
 (Billions of US dollars)



- Gross financing requirements before debt relief
- + Gross financing requirements after debt relief
- ◆ Debt service obligations before debt relief
- △ Debt service obligations after debt relief
- × Trade surplus including private transfers
- ▽ Change in reserves



Annex chart 7  
 Selected IBRD borrowers: Gross financing requirements, 1989-2000  
 (Percent of GDP)



Because of their broader trade composition, the terms of trade for this group would be less volatile than for the other groups, and is projected to improve moderately with export and import prices increasing smoothly at 5.1 and 4.8 percent a year, respectively.

Investment as a share of GDP would rise from 18 per cent in 1985-1988, to 22 and 25 percent in 1995 and 2000, respectively, with the efficiency gradually reaching about 20 percent by 2000. Real per capita consumption would increase only in the second half of the decade and by 2000 would be 15 percent lower than in 1984-88.

The resource balance would remain positive for the 1990s, averaging above \$1.1 billion a year. The outflow of private transfers, which was about \$700 million in 1987-88 would gradually decline and disappear in 2000. Grants to finance investment - starting from a low level - would double during the decade. Real ODA would increase slowly. Non-concessional loans are assumed to remain constant, in nominal prices, at 1988 levels. Direct foreign investment would increase at an average annual rate of 5 percent during the 1990s.

Debt service ratios, after debt rescheduling, for this group of countries were the highest in the region in 1988 (at 48 percent) they would decline to about 35 per cent in 1995 and 29 percent in 2000. It was assumed that official bilateral debt would be rescheduled on Toronto terms, easing the pressure in the early years of the 1990s. The financing gap would grow from 4.8 percent of GDP in 1991-95 to 5.2 percent in 1996-2000. The gap is wider than in any other group.

pressure in the early years of the 1990s. The financing gap would grow from 4.8 percent of GDP in 1991-95 to 5.2 percent in 1996-2000. The gap is wider than in any other group.

**Annex table 5 Selected IBRD borrowers: Key economic indicators, 1985-88, 1995, 2000**  
(average annual percentage change, unless otherwise indicated)

	1985-88	1995	2000
<b>Domestic indicators</b>			
Real gross domestic product (GDP)	1.4	3.4	5.0
Real gross domestic investment (GDI)	-6.5	6.2	7.9
GDI, percent of GDP	17.8	21.8	25.0
Gross domestic savings (Percent of GDP)	21.8	24.3	27.3
Real consumption per capita	-0.7	-0.1	1.2
Real gross national income (GNY)	-3.2	3.3	5.5
Real GNY per capita (1988 US\$)	963.0	796.0	861.0
Real effective exchange rate	..	-3.0	-3.0
ICOR (1988, 1994, 1999 prices respectively)	14.3	6.2	4.9
<b>Trade indicators and official development assistance</b>			
Import elasticity	-2.2	1.0	1.0
Import volume	-3.0	3.5	5.0
Imports (percent of GDP)	26.2	29.6	34.6
Export volume	-1.3	1.8	4.1
Exports (percent of GDP)	30.2	32.1	36.9
Import prices	8.6	5.5	4.8
Export prices	-0.3	4.9	5.7
Terms of trade index (1988=100)	111.4	102.8	106.8
Real gross ODA	12.0	2.0	2.2
Gross ODA (percent of GDP)	1.7	2.1	2.2
<b>Debt service indicators before debt relief</b>			
Debt service ratio (percent of exports)	..	33.4	26.2
Debt service (percent of GDP)	..	10.6	9.5

Sources: World Bank data and projections.

**Annex table 6 Selected IBRD borrowers: Financing and debt relief, 1985-88, 1995, 2000**  
 (average annual percent of GDP, unless otherwise indicated)

	1985-88	1995	2000
Total foreign financing required			
US\$ billion	3.6	5.3	6.8
Percent of GDP	12.6	3.7	12.9
Gross inflows	10.8	9.2	8.2
Net debt relief	..	0.2	-1.0
Residual financing gap	1.8 a/	4.3	5.7
Memo items:			
Debt service indicators <u>after</u> debt relief			
Debt service ratio (percent of exports)	40.4	32.6	29.0
Debt service	12.1	10.3	10.5

a/ Includes statistical discrepancy.

Sources: World Bank data and projections.

## Simplified algebraic description of the model

Variables are dollar-denominated.

Real magnitudes, indicated by #, are expressed at constant 1988 prices.

Simulations cover period 1988 - 2000.

Indices are derived from dollar-denominated variables with 1988 as a base year.

The upper-case suffix t denotes the time period.

Variables indicated by an @ are exogenous.

### National accounts equations:

- I.  $@GDP\# = GDP\#^{t-1} * (1 + r_{GDP})$
- II.  $@X\#_{oil} = X\#_{oil}^{t-1} * (1 + r_{Xoil})$
- III.  $@X\#_{non-oil} = X\#_{non-oil}^{t-1} * (1 + r_{Xnon-oil})$
- IV.  $X\# = X\#_{oil} + X\#_{non-oil}$
- V.  $@M\# = M\#^{t-1} * (1 + a_M * r_{GDP})$
- VI.  $@P_{GDP} = PRER * P_M$
- VII.  $GDP = GDP\# * P_{GDP}$
- VIII.  $GDI = a_i * GDP$  <sup>6/</sup>
- IX.  $X = X\# * p_X$
- X.  $M = M\# * p_M$
- XI.  $C = GDP - GDI - X + M$
- XII.  $GDS = GDI + (X - M)$

---

<sup>6/</sup> From variables defined in formulas 6-8, the incremental capital output ratio (ICOR), based on investment in period t-1 and the change in GDP at t-1 year prices, can be calculated as follows:

$$ICOR = GDI^{t-1} / [(GDP * P_{GDP}^{t-1} / P_{GDP}) - GDP^{t-1}].$$

- XIII.  $GNP = GDP - NFY + DRI$
- XIV.  $GNS = GDS - NFY + DRI + NPT$
- XV.  $P_{DA} = (GDP + M - X) / (GDP\# + M\# - X\#)$
- XVI.  $C\# = C / P_{DA}$
- XVII.  $GDI\# = GDP\# - C\# - X\# + M\#$
- XVIII.  $GNP\# = GNP / P_{GDP}$
- XIX.  $@P_{ToT} = P_X / P_M$
- XX.  $ToTAdj\# = (P_{ToT} - 1) * X\#$
- XXI.  $GNY\# = GNP\# + ToTAdj\#$

Balance-of-payments equations:

- XXII.  $X_{gnfs} = a_{XRT} * X$
- XXIII.  $M_{gnfs} = a_{MRT} * M$
- XXIV.  $NonInt = NonInt^{t-1} * (1 + r_{NonInt}) * P_{GDP} / P_{GDP}^{t-1}$
- XXV.  $NFY = INT + NonInt$
- XXVI.  $@NPT = NPT^{t-1} * (1 + r_{NPT}) * P_{MUV} / P_{MUV}^{t-1}$
- XXVII.  $@NOT = NOT^{t-1} * (1 + r_{NOT}) * P_{OECDGDP} / P_{OECDGDP}^{t-1}$
- XXVIII.  $@DFI = DFI^{t-1} * (1 + r_{DFI}) * P_{MUV} / P_{MUV}^{t-1}$
- XXIX.  $@STD = STD^{t-1} * \{1 + [(1 + a_M * r_{GDP}) * P_M / P_M^{t-1} - 1] * a_{ST}\}$
- XXX.  $NDST = STD - STD^{t-1}$
- XXXI.  $R = a_R * M_{gnfs} / I_2$
- XXXII.  $ChR = R - R^{t-1}$
- XXXIII.  $DS = INT + AMT$
- XXXIV.  $GAP = M_{gnfs} - X_{gnfs} + NonInt - NPT - NOT - DFI - GDMLT + DS - NDST + ChR$

**List of symbols:**

$a_I$	Share of investment in GDP, exogenous
$a_M$	Elasticity of imports relative to GDP growth, exogenous
$a_{MRT}$	Constant, exogenous adjustment between the imports of goods and non-factor services in the system of national accounts and balance of payments
$a_R$	Target level of international reserves to finance imports defined as months of coverage, exogenous
$a_{ST}$	Elasticity of short-term debt stock relative to import growth, exogenous
$a_{XRT}$	Constant, exogenous adjustment between the exports of goods and non-factor services in the system of national accounts and balance of payments
AMT	Scheduled amortization obligations of medium- and long-term debt, exogenous
C	Consumption
ChR	Changes in reserves
DFI	Net direct foreign investment
DRI	Reduction in interest obligations through debt relief, net of moratorium interest
DS	Scheduled debt service obligations
GAP	Residual financing gap before debt relief
GDI	Gross domestic investment
GDMLT	Gross disbursements of medium- and long-term loans, exogenous
GDP	Gross domestic product
GDS	Gross domestic savings
GNP	Gross national product after debt relief
GNS	Gross national savings after debt relief



<b>GNY</b>	<b>Gross national income after debt relief</b>
<b>INT</b>	<b>Scheduled interest obligations of short-, medium- and long-term debt, exogenous</b>
<b>M</b>	<b>Imports of goods and non-factor services (national account definition)</b>
<b>Mgnfs</b>	<b>Imports of goods and non-factor services (balance-of-payments definition)</b>
<b>NDST</b>	<b>Net disbursements of short-term loans</b>
<b>NFY</b>	<b>Obligations of net factor income to abroad</b>
<b>NonInt</b>	<b>Non-interest net factor service payments</b>
<b>NOT</b>	<b>Net official transfer receipts</b>
<b>NPT</b>	<b>Net private transfer receipts</b>
<b>PDA</b>	<b>Deflator of domestic absorption</b>
<b>PGDP</b>	<b>GDP deflator index</b>
<b>PM</b>	<b>Import price index merchandise goods (country/group specific), exogenous</b>
<b>PMUV</b>	<b>Unit value index of imported manufactured goods (based on G-5 exports to sub-Saharan Africa), exogenous</b>
<b>POECDGNP</b>	<b>GNP deflator of OECD countries (approximated by the average US\$ deflator for the G-5 countries), exogenous</b>
<b>PRER</b>	<b>Real exchange rate (\$/local currency) index, exogenous</b>
<b>PToT</b>	<b>Terms of trade index</b>
<b>PX</b>	<b>Export price index, exogenous</b>
<b>R</b>	<b>Value of international reserves</b>
<b>r<sub>DFI</sub></b>	<b>Real growth rate of direct foreign investment, exogenous</b>
<b>r<sub>GDP</sub></b>	<b>Real growth rate of GDP, exogenous</b>
<b>r<sub>NonInt</sub></b>	<b>Real growth rate of non-interest net factor service payments, exogenous</b>
<b>r<sub>NOT</sub></b>	<b>Real growth rate of net official transfer payment receipts, exogenous</b>

$r_{NPT}$	Real growth rate of net private transfer receipts, exogenous
$r_{X_{non-oil}}$	Real growth rate of non-oil exports of goods and non-factor services, exogenous
$r_{X_{oil}}$	Real growth rate of oil exports, exogenous
STD	Short-term debt
ToTAdj	Gain or loss of national income resulting from terms-of-trade changes
X	Exports of goods and non-factor services (national account definition)
Xgnfs	Exports of goods and non-factor services (balance-of-payments definition)
$X_{non-oil}$	Non-oil exports of goods and non-factor services
$X_{oil}$	Oil exports

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