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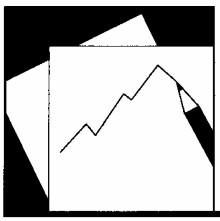

IMF Working Paper

Sources of Growth in Sub-Saharan Africa

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Bernardin Akitoby, and Emmanuel Brou Aka

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African Department

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Abstract

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Analysis of 1960-2002 data shows that average real GDP growth in sub-Saharan Africa was low and decelerated continuously before starting to recover in the second part of the 1990s. Growth was driven primarily by factor accumulation with little role for total factor productivity (TFP) growth. The recent pickup in economic growth was accompanied by an increase in TFP growth, namely in the group of countries whose IMF-supported programs were judged to be on track. Average annual growth in the region, at 3½ percent during 1997-2002, is less than half of the estimated growth needed to halve the fraction of population living below $1 per day between 1990 and 2015, one of the Millennium Development Goals.

JEL Classification Numbers: O55, O47

Keywords: Sub-Saharan Africa; Growth Accounting; Growth Prospects

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I. INTRODUCTION

Poverty reduction is today a central objective of the IMF's policy design and advice for low-income countries (LICs), along with the institution's more traditional focus on correcting financial imbalances and promoting the development of productive resources and economic growth. The issue of how to help low-income countries halve poverty by the year 2015 relative to 1990, one of the Millennium Development Goals (MDGs), has increasingly become a focal point of the dialogue between these countries and the international donor community. As demonstrated empirically by a number of recent papers,[2] economic growth plays a critical role in lowering poverty. This paper investigates the prospects of lowering poverty in sub-Saharan Africa, by examining the sources of growth in individual countries and drawing lessons for growth prospects.

The analysis of the sources of growth, using the growth accounting framework, has received considerable attention for countries in East Asia.[3] The related debate has centered on whether the East Asian miracle was driven primarily by factor accumulation (capital and labor) or total factor productivity (TFP). For sub-Saharan Africa, while a number of papers have looked at the determinants of economic growth in the region,[4] more recently, few have analyzed the sources of growth from a growth accounting perspective. The bulk of the analyses point to factor accumulation as the main source of growth in sub-Saharan Africa, with the contribution of TFP growth playing a minor role.[5] This paper examines the sources of growth in sub-Saharan African countries, using the growth accounting framework and extending the existing analysis both by country and time coverage. In addition, it compares the sources of growth for subregions and subperiods, and examines the sectoral composition of output.

Bosworth and Collins (2003) have argued that the growth accounting framework is a useful tool to understand growth experiences across countries. The same authors have, however, noted the limitations of this methodology. A key weakness relates to the interpretation that the measured residual from the growth accounting exercise represents TFP growth. In practice, in addition to providing a measure of gains in economic efficiency, the residual may also reflect a number of other factors, including political disturbances and conflicts, institutional changes, droughts, external shocks, changes in government policies, and

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[2] See, for example, Dollar and Kraay (2001); and Ghura, Leite, and Tsangarides (2002).

[3] See, for example, Bosworth and Collins (2003); Collins and Bosworth (1996); Krugman (1994); Sarrel (1997); and Young (1995).

[4] For recent surveys on this subject, see Fosu (2001); and McPherson and Rakovski (2001).

[5] Appendix I provides a brief survey of selected recent papers on economic growth and its sources in sub-Saharan Africa.

measurement errors.[6] This limitation is particularly important for sub-Saharan African countries mired in conflicts and subject to significant drought-related and external shocks. Also, the results from growth accounting exercise should not be misconstrued as providing the fundamental causes of growth (rather than the proximate sources of growth).

Notwithstanding the limitations noted above, the paper's main results are noteworthy. In particular, average real GDP growth in the region during 1960-2002 was driven primarily by factor accumulation with little or no role for TFP. The recent increase in growth (during 1997-2002, relative to 1990-96) was accompanied by a pickup in TFP growth, namely in countries whose IMF-supported programs were adjudged to be on track, were part of the group of CFA franc zone, and were in the middle-income category. Nonetheless, the average annual growth performance in the region at 3½ percent during 1997-2002 is less than half of the estimated growth needed to achieve the MDG of halving the fraction of population living below $1 per day by 2015. Doubling the average annual growth rate requires a significant boost in TFP growth, raising the investment-GDP ratio, and the resolution of conflicts.

The remainder of this paper is organized as follows: Section II provides some stylized facts about growth performance in sub-Saharan Africa; Section III undertakes a growth accounting analysis; Section IV examines growth prospects and challenges for the region; and Section VI concludes the paper.

II. Growth Performance in Sub-Saharan Africa: Some Stylized Facts

This section provides some stylized facts about growth performance in sub-Saharan Africa during 1960-2002, including for selected subgroups of countries (Table 1). Tables 2 and 3 report the growth performance in individual and subgroups of countries during 1960-2002, and compares performance over two recent subperiods (1991-96 and 1997-2002); a number of countries in the region have intensified their efforts to implement policy reforms during 1997-2002.

- The growth performance of the region as a whole was weak during 1960-2002, with an average growth rate of 3.3 percent. This barely exceeds the average population growth rate of about 3 percent and is less than half of what is needed to achieve the MDG goal of halving the fraction of the population living below $1 per day.[7]

[6] Another problem with the growth accounting framework is that it does not decompose properly growth stemming from the exploitation of natural resources. If a new oil field or diamond mine comes on stream it will tend to show up more as a boost in TFP than factor accumulation.

[7] The World Bank (2000) estimates that an annual average growth rate of about 7 percent, and a better distribution of income, would be needed to achieve the MDG of halving the incidence of severe poverty by 2015.

- Only four countries (Botswana, Equatorial Guinea, The Gambia, and Mauritius) registered an average growth rate of at least 5 percent during 1960-2002. This number had tripled in the period 1997-2002, with 12 countries registering an average growth of at least 5 percent.

- Turning to the subgroups of countries, middle-income countries (MICs) experienced the fastest real GDP growth (an annual average of 4.8 percent), and the countries mired in conflicts had the weakest growth performance (an annual average of 2.4 percent), especially during the subperiod 1991-96.

- Most country subgroups, with the exception of countries whose programs were adjudged to be "off track," experienced a boost in growth during 1997-2002 (compared with 1991-96).

- The performance of countries whose programs with the IMF were adjudged to be "on track" improved during 1997-2002 (compared with 1991-96): real GDP growth in this group of countries increased significantly to an annual average of 4.1 percent during 1997-2002 from 1.5 percent during 1991-96).

Tables 4 and 5 provide the results of an examination of the sectoral contribution to overall economic growth.

- Following a pattern seen in low-income countries in the world, the share of the tertiary sector (which includes public and private services) was the largest in total value added.

- The share of the secondary sector in total value added was the lowest in all subgroups, with the exception of the middle-income and oil-producing countries.

- Over time, the share of the tertiary sector remained broadly stable, but the share of the primary sector declined and that of the secondary sector rose, particularly driven by the group of oil-producing and middle-income countries.

- The tertiary sector contributed the most to real GDP growth (about 50 percent) in sub-Saharan Africa as a group; this was also the case for the group of all LICs in the world. The same pattern was observed in the subgroups of countries, with the exception of the oil-producing countries, where the contribution of the secondary sector (which includes the oil sector) was the largest.

- On average, growth performance in sub-Saharan Africa deteriorated almost continuously from the 1960s to the mid-1990s. This was accompanied by the significant decline in the contribution of agriculture in the 1970s (compared with the 1960s) and the decline in the contribution of the tertiary sector in the 1980s and 1990s.

- Real GDP growth was highly correlated with both the secondary sector's contribution to growth (correlation of 0.9) and the tertiary sector's contribution to

growth (correlation of 0.8), whereas the correlation with the primary sector's contribution was weak.

Tables 4 and 5 also provide some stylized facts on trade, saving, and investment.

- The average share of trade (exports plus imports) in GDP was relatively high in sub-Saharan Africa during 1960-2002, compared with the group of LICs in the world. This was driven largely by the performance of middle-income and, over time, oil-producing countries.

- The average investment-GDP ratio in sub-Saharan Africa during 1960-2002 (at about 21 percent) was lower than the group of LICs in the world (about 25 percent).

- Moreover, the annual average domestic saving-GDP ratio in sub-Saharan Africa at about 11½ percent during 1960-2000 was weaker than the annual average of LICs (about 17 percent). The performance of domestic saving in sub-Saharan Africa deteriorated significantly over time for virtually all the country groups. In the group of LICs in the world, the domestic saving-GDP ratio actually increased over time.

III. GROWTH ACCOUNTING

A standard growth-accounting framework, based on a standard Cobb-Douglas production function, is used for the analysis:

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha} \tag{1}$$

where Y is output, A is total factor productivity (TFP), K represents physical capital, L is labor, α is the elasticity of output with respect to the capital input (the value of α is between 0 and 1), and t is a time index. Given the paucity of the relevant data, the labor force series is not adjusted for human capital stock; thus in this formulation, educational attainment is part of TFP. Taking natural logarithm of the production function, and differentiating with respect to time, gives:

$$\frac{\dot{Y}}{Y} = \frac{\dot{A}}{A} + \alpha\frac{\dot{K}}{K} + (1-\alpha)\frac{\dot{L}}{L}, \tag{2}$$

where the dotted variables denote time derivatives.

The data were spliced from the series obtained from the IMF World Economic Outlook (WEO) and the World Bank World Development Indicators databases. The time coverage is 1960-2002. Output is measured by the GDP at constant prices (expressed in local currency units). The labor force is proxied by data on the economically active population. The capital stock series are constructed using the perpetual inventory methodology. It is assumed that the initial capital-output ratio in 1960 was 1.5 and the depreciation rate was set at 6 percent. In line with the literature on production function estimates for developing

countries,[8] the share of capital (α) is set at 0.4; the findings are robust to an alternative value of α of 0.3.

The results from growth accounting exercises for individual countries and for subgroups of countries over the period 1960-2002 are provided in Tables 6-9:

- The average TFP growth for sub-Saharan Africa as a whole was nil during 1960-2002, contributing to the poor overall growth performance of the region. This result is consistent with the findings of Bosworth and Collins (2003).

- Real GDP growth was driven largely by factor accumulation.

- Almost half of the countries in the region experienced declines in TFP on average during 1960-2002. Only five countries (Botswana, Equatorial Guinea, Mauritius, Swaziland, and Uganda) experienced an average TFP growth of more than 1 percent during 1960-2002.

- During the period 1981-2000, the contribution of both physical capital and TFP declined significantly, reflecting the poor performance of countries in conflict. The latter experienced an average TFP decline of 0.8 percent during this period, and a decline of 2.1 percent on average during 1991-2000.[9]

- In the 1960s, TFP growth contributed on average to about 30 percent of output growth in sub-Saharan Africa, but its contribution became negative in the subsequent decades. Only the subgroups of countries categorized as middle-income, oil-producing, nonconflict, and CFA franc countries experienced positive TFP growth on average during 1991-2000.

- An evaluation of economic growth during 1990-2002 shows that average growth in sub-Saharan Africa rose from 2.1 percent during 1990-96 to 3.6 percent during 1997-2002, driven by a significant increase in TFP growth. To a large extent this result was propelled by the improved performance in countries whose programs with the Fund were adjudged to be on track, CFA franc countries, and increased oil production in Equatorial Guinea.

    - The improved performance of the CFA franc countries during 1997-2002 most likely reflects the positive impact of the 1994 devaluation on tradables and complementary structural reforms undertaken by several of

[8] Bosworth, Collins, and Chen (1995) provide empirical support for this value. Senhadji (2000) finds a mean value of 0.43 for group of countries from sub-Saharan Africa.

[9] The large decline in TFP could also reflect the "destruction" of human and physical capital stemming from conflicts.

these countries in the postdevaluation period.[10] Besides the exchange rate change, by and large, the governments' programs in these countries consisted of (i) internal adjustment measures, including fiscal tightening and the implementation of structural reforms related to the reorganization and downsizing of the civil service, (ii) privatization of public enterprises, (iii) bank restructuring, and (iv) liberalization of domestic prices at the national level and of interest rates at the regional level.

- The increased TFP growth during 1997-2002 in countries whose program was on track likely reflected the efficiency gains from the implementation of macroeconomic and structural reforms.

Bosworth and Collins (2003) provide a comparison of the growth performance of various subregions in the world during 1960-2000 (Table 10). Their results for sub-Saharan Africa, using a much smaller set of countries and adjusting for educational attainment, are comparable to those of the current paper. In addition, their results indicate that growth in the region was the slowest of all other regions in the world, driven largely by the poor record of TFP growth.

IV. Growth Prospects and Challenges

Although the recent pickup in economic growth has been encouraging, the region has a long way to go to make up for the ground lost over the past three decades and to catch up with the growth rates of LICs in other regions. In particular, economic growth rates are still not high enough to enable sub-Saharan African countries to make a real dent in the pervasive poverty. There is thus a need to raise substantially real GDP growth rates on a sustained basis, both through the productivity channel and by raising investment. The rest of this section draws on the work of the existing empirical studies to draw some lessons on how this can be achieved.

Using the empirical literature on the determinants of TFP growth as a guide,[11] it is argued that the factors that positively influence TFP growth include:

- **Good quality institutions.** Better institutions include those that deliver better law and order, better bureaucratic quality, less corruption, lower risks of expropriation, and lower probability of government repudiation of contracts (Bosworth and Collins, 2003).[12]

[10] However, over the last two years, performance in a number of these countries has been adversely affected by the crisis in Côte d'Ivoire.

[11] See Berthélemy and Söderling (2001); Bosworth and Collins (2003); and Senhadji (2000).

[12] See also Rodrik, Subramanian, and Trebbi (2002) for an analysis of the role of institutions in economic development.

- **Human capital development.** It will be important to increase the quantity and quality of basic health care, education, and other high-priority services, with a view to improving social indicators appreciably over the longer term.

- **Favorable macroeconomic policy environment.** Following Senhadji (2000), the elements of such an environment include lower levels of external debt and government consumption, and higher levels of international reserves.

- **Diversification of the economic base.** The paper by Berthélemy and Söderling (2001) shows that the countries in sub-Saharan Africa that have been successful at diversifying their economic base from agriculture to secondary and tertiary sectors have experienced higher TFP growth. As noted in Section II above, in the sample of the countries in this paper, real GDP growth was highly correlated with both the secondary sector's contribution to growth (correlation of 0.9) and the tertiary sector's contribution to growth (correlation of 0.8), whereas the correlation with the primary sector's contribution was weak.

Successful economic diversification will depend critically on decisive steps on structural reforms including privatization, financial sector reform, and trade liberalization. Calamitsis, Basu, and Ghura (1999) have noted the need to accelerate the restructuring and privatization of public enterprises, in order to reduce reliance on budgetary subsidies and transfers, expand the scope for private sector activity, and promote overall economic efficiency and growth. In addition, financial sector reform needs to be deepened.[13] In this regard, steps need to be taken to ensure the independence and full accountability of central banks; deepen and broaden financial markets; establish or strengthen the institutions responsible for the prudential regulation and supervision of banks; open the banking sectors to healthy competition and international best practices in bank management; and strengthen the legal framework for banking activities. Trade liberalization can also contribute to the acceleration of TFP growth by promoting the competitiveness of domestic producers and speeding up sub-Saharan Africa's integration into the global economy.

Nonetheless, boosting TFP alone will be insufficient to raise economic growth rates to levels required to significantly lower poverty. It will also be essential to boost investment to levels comparable to other developing countries in the world. Over the period 1991-2000, the average investment-GDP ratio and the real GDP growth rate was at 18½ percent and 1.8 percent, respectively, in the LICs in sub-Saharan Africa, compared with about 24 percent and 3 percent in all LICs in the world. The international donor community has a role to play by raising the level of financial support to boost government investment. The role of government will need to be focused on the effective delivery of essential public services and basic infrastructure, as well as the promotion of human resource and social development. As regards private investment, recent empirical work suggests that it can be boosted by increases in government investment, a stable macroeconomic environment, financial deepening, and

[13] For a survey on the experience with financial sector reforms in sub-Saharan Africa, see Reinhart and Tokatlidis (2003).

improvements in the quality of institutions (see, for example, Hadjimichael and Ghura (1995)).

V. Some Concluding Remarks

This paper examined the sources of growth in sub-Saharan African countries and prospects of lowering poverty in the region, using the growth accounting framework. The results of the analysis show that average real GDP growth in the region during 1960-2002 was driven primarily by factor accumulation with little or no role for TFP. The recent pickup in growth (during 1997-2002, relative to 1990-96) was made possible by an improvement in TFP growth, namely in countries whose IMF-supported programs were adjudged to be on track, were part of the group of CFA franc zone, and in the middle-income category. Nonetheless, the growth rates required in many countries of the region, to significantly lower poverty by 2015, are high relative to past performance, and would need a significant boost in TFP growth. In addition, investment-GDP ratios in sub-Saharan Africa, which remain low compared to the group of low-income economies in the world, would need to be boosted. Also, international efforts to resolve conflicts in the region and stop the cycles of violence and destruction will be critical to enable the countries concerned to resume the path of sustainable growth.

For a number of countries in the region, a prerequisite for growth enhancement is the resolution of conflicts. A number of papers have been written on conflicts,[14] including Gudmundsson's (2004) survey of the literature on the causes and consequences of conflicts. In general, the empirical work finds that the risk for increased conflicts are explained primarily by economic factors (such as initial income, dependence on commodity exports, economic growth in the preceding period), but also by noneconomic factors (such as ethnic fractionalization). Other studies point to spillover of regional conflicts on the economic performance of a given country (e.g., Sambanis (2003)). Conflicts in neighboring countries also heighten the risk that the country itself will fall into civil war (Collier and others (2003)). The paper by Yartey (2004), focusing on data from sub-Saharan Africa, finds that conflicts in the region are caused by low economic growth and weak institutions. The findings of these studies demonstrate that the resolution of conflict is a complex endeavor that requires the concerted effort of the international donor community.

Using the results of other studies as a guide, we argue that the factors that can positively influence TFP growth in sub-Saharan Africa include good quality institutions, human capital development, a favorable macroeconomic policy environment, trade liberalization, and diversification of the economic base from agriculture to manufacturing and services. Indeed, the paper finds that the correlation between growth and the contributions of the secondary and tertiary sectors are higher than that of agriculture. In addition, the fact that other studies have found that TFP growth is vulnerable to terms of trade shocks highlights the need to diversify the economic base in sub-Saharan African countries. Better institutions include

[14] See, for example, Clément (2004); Collier (1999); Collier and Hoeffler (2002); Collier and others (2003); Sambanis (2003); and Yartey (2003).

those that deliver better law and order, better bureaucratic quality, less corruption, lower risks of expropriation, and lower probability of government repudiation of contracts.

Table 1. Sub-Saharan Africa: Subgroups of Countries 1/

	Low-Income Countries 2/	Middle-Income Countries 3/	Program-on-track Countries 4/	Program-off-track Countries 5/	Oil-Producing Countries	Conflict Countries 6/	CFA Zone Countries
Angola	Lesotho	Botswana	Benin	Cape Verde	Angola	Angola	Benin
Benin	Liberia	Cape Verde	Burkina Faso	Congo, Dem. Rep of	Cameroon	Burundi	Burkina Faso
Burkina Faso	Madagascar	Equatorial Guinea	Cameroon	Cote d'Ivoire	Congo, Rep. of	Central African Rep.	Cameroon
Burundi	Malawi	Gabon	Chad	Gabon	Eq. Guinea	Comoros	Central African Rep.
Cameroon	Mali	Mauritius	Ethiopia	Gambia, The	Gabon	Congo	Chad
Central Afr. Rep.	Mozambique	Namibia	Ghana	Guinea	Nigeria	DRC	Congo
Chad	Niger	Seychelles	Lesotho	Guinea-Bissau		Côte d'Ivoire	Côte d'Ivoire
Comoros	Nigeria	Swaziland	Mali	Kenya		Eritrea	Equatorial Guinea
Congo, Rep. of	Rwanda	South Africa	Niger	Madagascar		Ethiopia	Gabon
Congo, Dem. Rep.	São Tomé and Principé		Rwanda	Malawi		Guinea-Bissau	Guinea-Bissau
Côte d'Ivoire	Senegal		Sierra Leone	Mozambique		Liberia	Mali
Eritrea	Sierra Leone		Tanzania	Nigeria		Sierra Leone	Niger
Ethiopia	Tanzania		Uganda				Senegal
The Gambia	Togo		Zambia				Togo
Ghana	Uganda						
Guinea	Zambia						
Guinea-Bissau	Zimbabwe						
Kenya							

1/ Source: IMF, African Department data base, April 2003; IMF, World Economic Outlook, April 2003; and World Bank, World Development Indicators, 2002

2/ World Bank classification for countries with 1999 per capita gross national income (GNI) of $755 or lower.

3/ World Bank classification for countries with 1999 per capita gross national income (GNI) in the range $756-$9,265.

4/ Using the Spring 2003 Sub-Saharan Africa Regional Economic Outlook classification of countries that completed program reviews on a timely basis through 2002.

5/ Using the Spring 2003 Sub-Saharan Africa Regional Economic Outlook classification of countries that did not complete program reviews on a timely basis through 2002.

6/ Countries that have experienced conflicts since 1995 (Guinea is excluded).

Table 2. Sub-Saharan Africa: Real GDP Growth by Country, 1960-2002
(In percent)

	1960-2002	1991-96	1997-2002
Sub-Saharan Africa	3.3	2.1	3.6
Angola	2.6	-1.9	6.6
Benin	3.3	4.4	5.1
Botswana	8.9	4.2	5.7
Burkina-Faso	3.4	4.5	4.3
Burundi	2.7	-3.4	1.5
Cameroon	3.8	-0.8	4.6
Cape Verde	4.0	5.3	6.3
Central African Republic	2.2	-1.1	3.2
Chad	3.3	3.2	5.5
Comoros	3.1	1.2	1.7
Congo, Republic of	4.0	1.1	2.5
Democratic Republic of Congo	0.2	-6.4	-3.0
Côte d'Ivoire	3.6	2.6	1.7
Equatorial Guinea	8.3	10.2	29.7
Ethiopia	3.0	2.4	4.4
Gabon	2.7	3.1	-0.1
The Gambia	5.1	3.1	5.0
Ghana	2.6	4.6	4.2
Guinea	3.5	4.0	4.0
Guinea-Bissau	3.0	3.3	-2.5
Kenya	4.0	2.0	1.2
Lesotho	3.4	5.1	1.9
Liberia	1.9	2.4	2.7
Madagascar	1.2	0.1	1.6
Malawi	3.5	3.6	1.6
Mali	3.7	2.7	5.4
Mauritius	5.3	5.9	5.3
Mozambique	3.4	3.8	8.9
Namibia	3.0	5.2	3.2
Niger	2.6	1.2	3.4
Nigeria	3.1	3.1	2.1
Rwanda	2.5	-5.7	8.0
São Tomé and Príncipe	2.5	1.4	2.9
Senegal	2.1	2.1	4.8
Seychelles	3.4	4.0	-0.4
Sierra Leone	0.5	-9.0	-2.2
South Africa	3.1	1.4	2.4
Swaziland	4.9	3.0	2.6
Tanzania	3.7	2.2	4.5
Togo	3.2	1.5	1.4
Uganda	3.7	7.3	5.7
Zambia	2.3	-1.5	2.5
Zimbabwe	2.6	2.5	-5.3

Source: IMF, World Economic Outlook, 2003; and authors' calculations.

Table 3. Sub-Saharan Africa: Real GDP Growth by Sub-Group of Countries, 1960-2002
(In percent)

	Full Period	Subperiods				
	1960-2002	1961-70	1971-80	1981-90	1991-96	1997-2002
Sub-Saharan Africa	3.3	4.5	3.2	2.6	2.1	3.6
Low-income countries	2.9	4.4	3.1	2.2	1.3	2.9
Middle-income countries	4.8	5.1	4.8	4.4	4.7	6.1
Program-on-track countries	...	...	...	...	1.5	4.1
Program off track countries	...	...	...	...	3.1	2.7
Oil-producing countries	4.1	5.1	3.7	2.8	2.5	7.6
Non-oil-producing countries	3.2	4.4	3.1	2.6	2.0	3.0
Conflict countries	2.4	4.7	3.4	2.1	-0.8	1.5
Nonconflict countries	3.6	4.5	3.2	2.8	3.0	4.3
CFA franc countries	3.5	4.6	3.2	2.4	2.7	4.9
Non-CFA-franc countries	3.2	4.5	3.2	2.8	1.7	2.9

Source: IMF, World Economic Outlook, 2003; and authors' calculations.

Table 4. Sub-Saharan Africa: Sectoral Contribution to Real GDP Growth, by Subgroup of Countries, 1960-2000

		Contribution to Growth 1/			Share in Real GDP 2/			Share in Real GDP 2/			
	Real GDP growth	Primary sector	Secondary sector	Tertiary sector	Primary sector	Secondary sector	Tertiary sector	Exports	Imports	Investment	Gross domestic savings
Sub-Saharan Africa	3.1	0.7	0.9	1.5	31.8	23.6	44.6	29.5	43.2	20.7	11.4
Low-income countries	2.6	0.8	0.6	1.2	36.1	21.5	42.5	24.5	37.9	19.7	8.1
Middle-income countries	5.3	0.3	2.3	2.7	15.9	31.6	52.4	49.1	64.7	25.6	24.4
Oil-producing countries	4.3	0.6	2.5	1.3	26.8	36.2	36.9	40.8	50.7	24.6	25.4
Non-oil-producing countries	3.0	0.7	0.7	1.6	32.7	21.5	45.8	27.8	42.3	20.3	9.2
Conflict countries	2.0	0.7	0.5	0.8	38.1	22.9	39.0	26.2	34.9	19.8	11.9
Non-conflict countries	3.6	0.6	1.1	1.8	29.7	23.8	46.5	30.8	46.4	21.3	11.4
CFA-franc countries	3.5	0.8	1.1	1.5	35.2	21.1	43.7	24.0	37.5	20.5	12.6
Non-CFA-franc countries	3.0	0.6	0.8	1.6	30.2	24.8	45.0	32.4	46.4	21.2	10.3
Nigeria	3.1	0.6	1.3	1.2	42.5	30.4	27.1	47.9	28.4	19.9	26.4
South Africa	3.1	0.1	1.0	2.0	5.0	38.2	56.9	22.9	19.0	18.8	31.0
Memorandum item:											
All low income countries in the world 1/	3.8	0.7	1.3	1.8	31.0	26.6	42.3	21.7	29.7	24.7	17.3

Sources: IMF, World Economic Outlook, 2003; World Bank, World Development Indicators, 2002; and authors' calculations.

1/ Percentage change.

2/ In percent.

Table 5. Sub-Saharan Africa: Sectoral Contribution to Real GDP Growth, Trade, Investment and Saving, by Subgroup of Countries and by Decades, 1960-2000

		Contribution to Growth 1/			Share in Real GDP 2/			Share in Real GDP 2/			
	Real GDP growth	Primary sector	Secondary sector	Tertiary sector	Primary sector	Secondary sector	Tertiary sector	Exports	Imports	Investment	Gross domestic savings
Sub-Saharan African											
1961-70	5.1	1.4	1.4	2.2	34.5	20.7	43.8	26.6	39.6	18.2	21.6
1971-80	3.5	0.4	1.0	2.1	33.9	23.3	42.4	28.1	40.1	25.2	15.3
1981-90	2.7	0.6	0.7	1.5	30.7	24.6	44.3	28.2	40.8	19.8	10.2
1991-2000	2.6	0.7	0.8	1.1	31.0	25.5	43.5	33.7	45.1	19.9	9.2
Low-income countries											
1961-70	4.9	1.5	1.3	2.1	36.2	19.9	42.9	22.3	35.0	20.9	21.3
1971-80	2.9	0.4	0.7	1.8	36.0	21.7	41.8	24.9	37.2	25.9	12.9
1981-90	2.5	0.7	0.4	1.3	33.5	22.3	43.7	22.8	35.2	18.4	6.5
1991-2000	1.8	0.8	0.4	0.7	35.3	21.9	42.2	28.1	38.4	18.5	5.7
Middle-income countries											
1961-70	...	...	...	...	...	...	...	47.2	55.2	19.2	34.8
1971-80	7.4	0.2	3.0	4.1	17.3	30.0	52.7	52.9	62.4	19.9	34.9
1981-90	3.7	0.1	1.5	2.1	20.2	32.7	47.2	46.7	59.8	25.1	23.6
1991-2000	5.4	0.3	2.3	2.8	15.5	38.6	48.3	54.3	69.9	26.6	22.1
Oil-producing countries											
1961-70	4.9	2.0	2.1	0.8	40.0	18.7	41.3	17.1	37.2	14.3	9.6
1971-80	4.6	0.1	2.1	2.4	30.5	29.0	40.5	26.7	33.9	21.2	26.2
1981-90	2.7	0.3	1.2	1.3	26.9	35.0	38.1	36.1	43.9	25.0	23.7
1991-2000	4.3	0.8	2.6	0.9	23.2	41.5	35.2	67.7	65.7	28.2	27.6
Non-oil-producing countries											
1961-70	5.1	1.3	1.3	2.4	33.5	21.1	44.3	29.2	40.0	19.1	25.4
1971-80	3.4	0.4	0.9	2.1	34.2	22.7	42.6	30.8	42.8	25.7	13.9
1981-90	2.7	0.6	0.6	1.5	31.1	23.1	45.3	26.5	39.8	26.4	12.7
1991-2000	2.3	0.7	0.4	1.2	32.4	23.0	44.7	28.1	41.7	18.6	6.1
Conflict countries											
1961-70	4.9	1.0	1.5	2.4	34.9	21.8	43.3	41.6	51.7	22.3	21.9
1971-80	3.2	1.0	0.6	1.7	38.3	21.8	39.9	28.0	43.2	29.2	12.4
1981-90	2.3	0.9	0.4	1.0	36.7	22.5	40.8	24.0	30.7	18.6	12.0
1991-2000	-0.5	0.3	-0.1	-0.8	41.5	22.3	36.2	28.4	33.1	15.8	9.4
Nonconflict countries											
1961-70	5.1	1.6	1.4	2.1	34.3	20.3	44.0	22.8	36.5	20.3	23.0
1971-80	3.6	0.2	1.1	2.3	32.3	23.9	43.3	31.2	41.3	23.8	16.2
1981-90	2.9	0.5	0.8	1.6	27.3	25.9	46.3	29.4	43.0	20.1	10.5
1991-2000	3.6	0.8	1.0	1.7	27.8	26.4	45.8	35.4	48.9	21.7	9.1
CFA-franc countries											
1961-70	5.1	1.8	1.2	2.1	35.0	15.7	47.1	16.7	28.4	16.5	16.0
1971-80	3.1	0.2	0.7	2.2	35.2	18.8	45.1	19.7	33.8	24.5	10.0
1981-90	2.3	0.6	0.7	1.1	32.0	22.1	44.6	23.8	35.3	18.6	9.7
1991-2000	3.5	1.3	1.3	1.0	33.3	24.4	40.9	28.5	37.8	19.0	13.9
Non-CFA-franc countries											
1961-70	4.6	1.0	1.5	2.1	31.2	22.8	37.7	33.3	45.8	22.2	26.6
1971-80	3.8	0.5	1.2	2.1	31.7	25.7	42.6	37.9	47.5	25.7	19.2
1981-90	2.9	0.6	0.7	1.6	29.8	26.1	44.1	30.7	44.0	21.0	11.0
1991-2000	2.1	0.4	0.5	1.2	30.1	26.1	44.6	36.8	48.3	20.6	7.1
Memorandum item:											
All low-income countries in the world 1/											
1961-70	4.0	0.9	1.5	1.7	38.0	21.3	40.7	...	...	22.7	11.9
1971-80	3.9	0.6	1.5	1.8	32.3	27.2	40.4	24.5	33.0	25.7	17.9
1981-90	4.4	0.8	1.5	2.0	27.5	29.0	43.5	19.9	31.6	26.8	19.3
1991-2000	3.1	0.6	0.7	1.8	25.1	29.9	44.9	20.7	24.4	24.1	20.5

Sources: IMF, World Economic Outlook, 2003; World Bank, World Development Indicators, 2002; and authors' calculations.
1/ Percentage change.
2/ In percent.

Table 6. Sub-Saharan Africa: Sources of Real GDP Growth by Country, 1960-2002
(Alpha = 0.4)

	Real GDP growth 1/	Contribution of: Physical capital 1/	Labor 1/	TFP 1/
Sub-Saharan Africa	3.2	1.8	1.5	0.0
Angola	2.3	2.1	1.6	-1.4
Benin	3.3	1.3	1.2	0.7
Botswana	7.5	3.8	1.7	2.0
Burkina Faso	2.7	1.5	1.0	0.1
Burundi	2.7	1.7	1.2	-0.2
Cameroon	3.8	1.9	1.3	0.6
Cape Verde	5.5	3.0	2.1	0.4
Central African Republic	2.2	0.9	1.0	0.3
Chad	4.1	2.0	1.5	0.6
Comoros	1.9	1.3	1.6	-0.9
Congo, Republic of	4.0	2.1	1.6	0.3
Democratic Republic of Congo	0.2	1.1	1.6	-2.4
Côte d'Ivoire	3.6	1.0	2.4	0.2
Equatorial Guinea	11.6	5.0	2.0	4.6
Ethiopia	2.8	1.3	1.5	0.0
Gabon	2.7	1.9	1.1	-0.2
The Gambia	4.9	2.3	1.9	0.7
Ghana	2.6	1.1	1.5	-0.1
Guinea	4.0	2.2	1.3	0.5
Guinea-Bissau	2.9	2.3	1.2	-0.7
Kenya	4.0	2.1	1.9	0.0
Lesotho	3.4	2.5	1.1	-0.1
Liberia	1.9	0.5	1.5	-0.1
Madagascar	1.2	0.8	1.6	-1.2
Malawi	3.5	2.1	1.4	0.0
Mali	2.9	1.3	1.2	0.4
Mauritius	5.3	2.5	1.6	1.2
Mozambique	3.6	2.3	1.0	0.3
Namibia	1.9	1.5	1.5	-1.1
Niger	2.6	1.0	1.7	-0.1
Nigeria	3.1	1.7	1.6	-0.2
Rwanda	2.5	1.1	1.8	-0.4
São Tomé and Príncipe	0.4	2.0	1.5	-3.0
Senegal	2.1	1.0	1.5	-0.5
Seychelles	3.2	2.9	0.8	-0.5
Sierra Leone	-2.6	-0.4	1.2	-3.5
South Africa	3.1	1.5	1.4	0.1
Swaziland	4.6	1.6	1.6	1.4
Tanzania	3.3	1.8	1.8	-0.3
Togo	3.2	1.6	1.5	0.1
Uganda	5.1	0.7	1.5	2.8
Zambia	2.3	1.7	1.6	-1.0
Zimbabwe	2.6	1.6	1.8	-0.7

Source: IMF, World Economic Outlook, 2003; and authors' calculations.
1/ Percentage change

Table 7. Sub-Saharan Africa: Sources of Real GDP Growth, by Sub-Group of Countries, 1960-2002

(Alpha = 0.4)

	Real GDP growth 1/	Contribution of: Physical capital 1/	Labor 1/	TFP 1/
Sub-Saharan Africa	3.2	1.8	1.5	0.0
Low-income countries	2.7	1.5	1.5	-0.3
Middle-income countries	5.0	2.6	1.5	0.9
Oil-producing countries	4.6	2.4	1.5	0.6
Nonoil-producing countries	3.0	1.6	1.5	-0.1
Conflict countries	2.0	1.3	1.5	-0.8
Non-conflict countries	3.6	1.9	1.5	0.2
CFA-franc countries	3.7	1.8	1.4	0.5
Non-CFA franc countries	3.0	1.7	1.5	-0.3
Nigeria	3.1	1.7	1.6	-0.2
South Africa	3.1	1.5	1.4	0.1
Memorandum item:				
All low-income countries in the world 2/	3.8	2.1	1.3	0.4

Sources: IMF, World Economic Outlook database, 2003; World Bank, World Development Indicators, 2003; and authors' calculations.

1/ Percentage change.

2/ Data through 2001.

Table 8. Sub-Saharan Africa: Sources of Real GDP Growth, by Subgroup of Countries and by Decades, 1960-2000 (Alpha = 0.4)

		Contribution of:		
	Real GDP growth 1/	Physical capital 1/	Labor 1/	TFP 1/
Sub-Saharan African				
1961-70	4.5	1.8	1.3	1.4
1971-80	3.2	2.4	1.4	-0.6
1981-90	2.6	1.5	1.6	-0.5
1991-2000	2.6	1.3	1.5	-0.1
Low-income countries				
1961-70	4.4	1.7	1.3	1.4
1971-80	3.1	2.3	1.4	-0.6
1981-90	2.2	1.2	1.6	-0.6
1991-2000	1.9	1.0	1.6	-0.6
Middle-income countries				
1961-70	5.1	...	1.1	...
1971-80	4.8	...	1.0	...
1981-90	4.4	2.7	1.7	0.0
1991-2000	5.4	2.3	1.5	1.6
Oil-producing countries				
1961-70	5.1	1.6	0.9	2.6
1971-80	3.7	3.5	1.5	-1.3
1981-90	2.8	1.9	1.7	-0.8
1991-2000	4.3	2.1	1.6	0.6
Non-oil-producing countries				
1961-70	4.4	1.9	1.3	1.2
1971-80	3.1	2.2	1.4	-0.5
1981-90	2.6	1.4	1.6	-0.4
1991-2000	2.4	1.1	1.5	-0.3
Countries in conflicts				
1961-70	4.7	2.1	1.3	1.2
1971-80	3.4	2.4	1.4	-0.4
1981-90	2.1	1.1	1.5	-0.4
1991-2000	-0.2	0.2	1.7	-2.1
Nonconflict countries				
1961-70	4.5	1.7	1.2	1.5
1971-80	3.2	2.4	1.5	-0.6
1981-90	2.8	1.7	1.7	-0.5
1991-2000	3.6	1.6	1.5	0.5
CFA-franc-countries				
1961-70	4.6	1.5	1.1	2.0
1971-80	3.2	2.4	1.3	-0.5
1981-90	2.4	1.2	1.5	-0.3
1991-2000	3.5	1.3	1.6	0.6
Non-CFA franc Countries				
1961-70	4.5	2.1	1.4	1.0
1971-80	3.2	2.3	1.5	-0.6
1981-90	2.8	1.7	1.7	-0.5
1991-2000	1.7	1.4	1.6	-1.2
Memorandum item:				
All low-income countries				
1961-70	4.0	2.8	1.1	0.1
1971-80	3.9	2.3	1.4	0.2
1981-90	4.4	2.0	1.3	1.1
1991-2000	3.1	1.3	1.4	0.4

Sources: IMF, World Economic Outlook database, 2003; World Bank, World Development Indicators, 2003; and authors' calculations.

1/ Percentage change.

Table 9. Sub-Saharan Africa: Sources of Real GDP Growth, by Sub-Group of Countries, 1990-2000

(Alpha = 0.4)

	Real GDP growth 1/	Contribution of: Physical capital 1/	Labor 1/	TFP 1/
Sub-Saharan Africa				
1990-1996	2.1	1.3	1.6	-0.8
1997-2002	3.6	1.3	1.4	0.8
Low-income countries				
1990-1996	1.7	1.1	1.6	-1.0
1997-2002	2.9	1.2	1.5	0.2
Middle-income countries				
1990-1996	4.6	2.3	1.5	0.8
1997-2002	6.1	2.0	1.4	2.7
Program-on-track countries				
1990-1996	1.5	1.3	1.5	-1.2
1997-2002	4.1	1.5	1.6	1.0
Program-off-track countries				
1990-1996	3.2	0.9	2.1	0.1
1997-2002	2.7	1.1	1.2	0.4
Oil-producing countries				
1990-1996	2.4	1.7	1.5	-0.9
1997-2002	7.6	2.3	1.5	3.8
Non-oil-producing countries				
1990-1996	2.3	1.3	1.6	-0.6
1997-2002	2.9	1.2	1.4	0.3
Conflict countries				
1990-1996	0.4	0.5	1.7	-1.8
1997-2002	1.5	0.5	1.5	-0.5
Nonconflict countries				
1990-1996	2.9	1.6	1.6	-0.3
1997-2002	4.2	1.5	1.4	1.3
CFA-franc countries				
1990-1996	2.5	1.0	1.6	-0.2
1997-2002	4.9	1.7	1.5	1.7
Non-CFA-franc countries				
1990-1996	2.2	1.4	1.6	-0.9
1997-2002	2.9	1.2	1.4	0.3
Nigeria				
1990-1996	3.7	1.4	1.6	0.7
1997-2002	2.1	0.2	1.6	0.4
South Africa				
1990-1996	1.2	0.3	1.4	-0.5
1997-2002	2.4	0.7	1.2	0.5
Memorandum item:				
All low-income countries countries in the world 2/				
1990-1996	3.0	1.4	1.4	0.2
1997-2001	3.4	1.1	1.3	1.0

Sources: IMF, World Economic Outlook database, 2003; World Bank, World Development Indicators, 2003; and authors' calculations.

1/ Percentage change.

2/ Data through 2001.

Table 10. Sources of Growth in the World by Region, 1960-2000 1/

	Output	Output per worker	Contribution of (to Output per Worker): Physical capital	Education	Factor productivity
World (84)	4.0	2.3	1.0	0.3	0.9
Sub-Saharan Africa (19)	3.2	0.6	0.5	0.3	-0.1
China (1)	6.8	4.8	1.7	0.4	2.6
East Asia, excluding China (7)	6.7	3.9	2.3	0.5	1.0
Industrial countries (22)	3.5	2.2	0.9	0.3	1.0
Latin America (22)	4.0	1.1	0.6	0.4	0.2
Middle East (9)	4.6	2.1	1.1	0.4	0.5
South Asia (4)	4.6	2.3	1.0	0.3	1.0

Source: Bosworth and Collins (2003).

1/ Numbers in parentheses denote the number of countries included.

References

Akitoby, Bernardin, and Matthias Cynyabuguma, 2004, "Sources of Growth in the Republic of the Congo: A Retrospective and Prospects," in *From Conflict to Reconstruction—Main Lessons and Challenges for Sub-Saharan Africa—The Case of the Democratic Republic of Congo*, ed. by Jean A.P. Clément (forthcoming; Washington: International Monetary Fund).

Amin, Aloysius Ajab, 2002, "An Examination of the Sources of Economic Growth in Cameroon," African Economic Research Consortium Research Paper 116 (Nairobi: African Economic Research Consortium).

Arora, Vivek B., and Ashok J. Bhundia, 2003, "Potential Output and Total Factor Productivity Growth in Post-Apartheid South Africa," IMF Working Paper 03/178 (Washington: International Monetary Fund).

Beddies, Christian H., 1999, "Investment, Capital Accumulation, and Growth: Some Evidence from Gambia 1964–98," IMF Working Paper 99/117 (Washington: International Monetary Fund).

Berthélemy, Jean-Claude, and Ludvig Söderling, 2001, "The Role of Capital Accumulation, Adjustment and Structural Change for Economic Take-off: Evidence from African Growth Episodes," *World Development*, Vol. 29, No. 2 (February), pp. 332-43.

Berthélemy, Jean-Claude, and Ludvig Söderling, 2002, "Will There be New Emerging-Market Economies in Africa by the Year 2020?" IMF Working Paper 02/131 (Washington: International Monetary Fund).

Bosworth, Barry, Susan M. Collins, and Yu-chin Chen, 1995, "Accounting for Differences in Economic Growth," *Brookings Discussion Papers in International Economics*, No. 115 (October), pp. 1–63.

Bosworth, Barry, and Susan M. Collins, 2003, "The Empirics of Growth: An Update," (unpublished draft; Washington: Brookings Institution).

Calamitsis, A. Evangelos, Anupam Basu, and Dhaneshwar Ghura, 1999, "Adjustment and Growth in Sub-Saharan Africa," IMF Working Paper 99/51 (Washington: International Monetary Fund).

Clément, Jean A.P., ed., 2004, *From Conflict to Reconstruction—Main Lessons and Challenges for Sub-Saharan Africa—The Case of the Democratic Republic of Congo* (forthcoming; Washington: International Monetary Fund).

Collier, Paul, 1999, "On the Economic Consequences of Civil War," *Oxford Economic Papers*, Vol. 51, pp. 163-83.

Collier, Paul, and Anke Hoeffler, 2002, "Greed and Grievance in African Civil Wars," *Quarterly Journal of Economics* (forthcoming).

Collier, Paul, and others, 2003, "Breaking the Conflict Trap: Civil War and Development Policy," (Washington: World Bank).

Collins, Susan, and Barry Bosworth, 1996, "Economic Growth in East Asia: Accumulation Versus Assimilation," *Brookings Papers on Economic Activity,* No. 2, pp. 135-203.

Dike, Enwere, 1995, "Sources of Long-Run Economic Growth in Nigeria: A Study in Growth Accounting," *African Development Review*, Vol. 7 (June), pp. 76-87.

Dollar, David, and Aart Kraay, 2001, "Growth is Good for the Poor," World Bank Policy Research Working Paper No. 2587 (Washington: World Bank).

Erasmus, Louis, and Luca Ricci, 2003, "An Analysis of Economic Growth in Swaziland," *in Swaziland: Selected Issues and Statistical Appendix*, IMF Country Report No.03/22, pp.42-52 (Washington: International Monetary Fund).

Fosu, Augustin Kwasi, 2001, "Global Setting and African Economic Growth," *Journal of African Economies*, Vol. 10, No. 3 (September), pp. 282-310.

Fosu, Augustin Kwasi, 2002, "Political Instability and Economic Growth: Implications of Coup Events in Sub-Saharan Africa," *American Journal of Economics and Sociology,* Vol. 61, No. 1 (January), pp. 329-48.

Ghura, Dhaneshwar, and Michael T. Hadjimichael, 1996, "Growth in Sub-Saharan Africa," *Staff Papers*, International Monetary Fund, Vol. 43 (September), pp. 605–34.

Ghura, Dhaneshwar, Carlos A. Leite, and Charalambos Tsangarides, 2002, "Is Growth Enough?: Macroeconomic Policy and Poverty Reduction," IMF Working Paper 02/118 (Washington: International Monetary Fund).

Guillaumont, Patrick, Sylvanie Guillaumont, and Jean-François Brun, 1999, "How Instability Lowers African Growth," *Journal of African Economies*, Vol. 8, No. 1 (March), pp. 87-107.

Gudmundsson, Ragnar, 2004, "Alleviating Poverty in Post Conflict Cases: A Survey of the Literature," in *From Conflict to Reconstruction—Main Lessons and Challenges for Sub-Saharan Africa—The Case of the Democratic Republic of Congo*, ed. by Jean A.P. Clément (forthcoming; Washington: International Monetary Fund).

Gyimah-Brempong, Kwabena, and Thomas L. Traynor, 1999, "Political Instability, Investment, and Economic Growth in Sub-Saharan Africa," *Journal of African Economies*, Vol. 8, No. 1 (March), pp. 52-86.

Gyimah-Brempong, Kwabena, and Marva E. Corley, 2002, "Civil Wars and Economic Growth in Sub-Saharan Africa," paper presented at the annual meetings of the American Economic Association, New Orleans, January 4-7.

Haacker, Markus, 2002, "The Economic Consequences of HIV/AIDS in Southern Africa," IMF Working Paper 02/38 (Washington: International Monetary Fund).

Haacker, Markus, 2002, "Modeling the Macroeconomic Impact of HIV/AIDS," IMF Working Paper 02/195 (Washington: International Monetary Fund).

Hadjimichael, Michael, and Dhaneshwar Ghura, 1995, "*Public Policies and Private Savings and Investment and Sub-Saharan Africa: An Empirical Investigation*," IMF Working Paper 95/19 (Washington: International Monetary Fund).

Hernández-Catá, Ernesto, 2000, "Raising Growth and Investment in Sub-Saharan Africa: What Can Be Done?" IMF Policy Discussion Paper 00/04 (Washington: International Monetary Fund).

Jonsson, Gunnar, and Arvind Subramanian, 2001, "Dynamic Gains from Trade: Evidence from South Africa," *Staff Papers*, International Monetary Fund, Vol. 48 (March), pp. 197-225.

Krugman, Paul, 1994, "The Myth of Asia's Miracle," *Foreign Affairs,* Vol. 73 (November-December), pp. 62-78.

Matovu, John, and Lamido Yuguda, 1999, "Sources of Economic Growth in Botswana," in *Botswana: Selected Issues and Statistical Appendix*, IMF Staff Country Report No. 99/132 (Washington: International Monetary Fund).

McPherson, Malcolm F., and Tzvetana Rakovski, 2001, "Understanding the Growth Process in Sub-Saharan Africa: Some Empirical Estimates," African Economic Policy Discussion Paper No. 54 (Washington: United States Agency for International Development).

Nkurunziza, Janvier D., and Robert H. Bates, 2003, "Political Institutions and Economic Growth in Africa," CSAE Working Paper Series. Working Paper 185 (Cambridge, Massachusetts: The Centre for the Study of African Economies, Harvard University).

Onjala, Joseph O., 2002, "Total Factor Productivity in Kenya: The Links with Trade Policy," AERC Research Paper 118 (Nairobi: African Economic Research Consortium).

Reinhart, Carmen, and Ioannis Tokatlidis, 2003, "Financial Liberalization: The African Experience," *Journal of African Economies*, Vol. 12, Supplement 2 (October), pp. ii53-ii88.

Rodrik, Dani, 1998, "Trade Policy and Economic Performance in Sub-Saharan Africa," NBER Working Paper 6562 (Cambridge, Massachusetts: National Bureau of Economic Research).

Rodrik, Dani, Arvind Subramanian, and Francesco Trebbi, 2002, "Institutions Rules: The Primary of Institutions Over Integration and Geography in Economic Development," IMF Working Paper 02/189 (Washington: International Monetary Fund).

Sacerdoti, Emilio, Sonia Brunschwig, and Jon Tang, 1998, "The Impact of Human Capital on Growth: Evidence from West Africa," IMF Working Paper 98/162 (Washington: International Monetary Fund).

Sachs, Jeffrey D. and Andrew M. Warner, 1997, "Sources of Slow Growth in African Economies," *Journal of African Economies*, Vol. 6, No. 4 (October), pp. 335-76.

Sambanis, Nicolas, 2003, Using Case Studies to Expand the Theory of Civil War," *CPR Working Paper* No. 5 (Washington: World Bank).

Sarrel, Michael, 1997, "Growth and Productivity in ASEAN Countries," IMF Working Paper 97/97 (Washington: International Monetary Fund).

Senhadji, Abdelhak, 2000, "Sources of Economic Growth: An Extensive Growth Accounting Exercise" Staff Papers, International Monetary Fund, Vol. 47, No.1, pp. 129-57.

Subramanian, Arvind, and Devesh Roy, 2001, "Who Can Explain the Mauritian Miracle: Meade, Romer, Sachs, or Rodrik?" IMF Working Paper 01/116 (Washington: International Monetary Fund).

Vera-Martin, Mercedes, 2000, "Long-Run Growth in Mali, Niger, and Senegal," (unpublished; Washington: International Monetary Fund).

World Bank, 2000, *Can Africa Claim the 21st Century?* (Washington).

Yartey, Charles, 2004, "The Economics of Civil Wars in Sub-Saharan Africa," in *From Conflict to Reconstruction—Main Lessons and Challenges for Sub-Saharan Africa—The Case of the Democratic Republic of Congo*, ed. by Jean A.P. Clément (forthcoming; Washington: International Monetary Fund).

Young, Alwyn, 1995, "Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience," *Quarterly Journal of Economics*, Vol. 110 (August), pp. 641-80.

Appendix I: Selected Literature Survey

Countries	Author(s)	Main Results
Botswana	Matovu and Yuguda (1999)	The study examines, using a growth accounting framework, whether the growth process of Botswana during 1982-1997 was intensive (technology/efficiency-driven) or extensive (factor-input-driven). The results show that the impressive growth since independence was made possible by both sizable factor accumulation and TFP growth. Although not as important as the increases in factor inputs, TFP growth was nonetheless significant and was comparable to those of the rapidly growing Asian countries.
Cameroon	Amin (2002)	Using a growth accounting framework and econometric analysis, the study examines the sources of growth in Cameroon during 1961-97. The results suggest that factor inputs played a more important role than TFP growth.
Congo, Dem. Rep	Akitoby Cinyabuguma (2004)	Using a cointegration methodology, the paper confirms that poor economic policies and weak governance (through their effects on TFP and capital accumulation) adversely affected the DRC's economic growth during 1960-2000.
The Gambia	Beddies (1999)	Using data during 1964-98 for The Gambia, the paper shows that the country's aggregate production function exhibits increasing returns to scale. Both private and public investment, as well as human capital accumulation boost output significantly.
Kenya	Onjala (2002)	The study investigates productivity sources in the manufacturing and agricultural sectors in Kenya, using a growth accounting framework during 1960-1995. The findings show output growth is dominated by factor accumulation in the agricultural sector. For the aggregate economy, output growth is again also dominated by factor inputs. Productivity performance improved with trade policy reforms.
Mauritius	Subramanian and Roy (2001)	The paper examines different explanations—initial conditions, openness to trade and FDI, and institutions—of the Mauritian growth experience since the mid-1970s. The authors find that the institutions-based explanation offers great promise in explaining the country's growth performance.

Appendix I (continued): Selected Literature Survey

Countries	Author(s)	Main Results
Nigeria	Dike (1995)	The study analyzes the sources of Nigeria's growth performance, using a growth accounting approach, during 1950-1991. The results show that labor force expansion and capital accumulation provided the engine of growth, with improvements in TFP playing at best a marginal role. The collapse in capital investment from the early 1980s, coupled with deterioration in capacity utilization, and a virtual lack of efficiency gains in the economy constituted the major source of long-run decline in GDP growth rates.
Mali, Niger, and Senegal	Vera-Martin (2000)	Aggregate production functions are estimated for the three Sahelian economies using cointegration techniques. Calculations of potential output indicate that capital and labor force account for the bulk of growth in these economies. Error-correction models are estimated to examine the determinants of short-run dynamics. The labor force is found to contribute to growth primarily over the long run, while capital is found to be, particularly important short-run determinant of output in Mali and Niger.
South Africa	Arora and Bhundia (2003)	Using a growth accounting framework, the study analyzes the sources of South Africa's real GDP growth during 1980-2001. It finds that the significant increase in the real GDP growth after 1994 was mainly due to TFP growth and not to greater factor accumulation. Moreover, the turnaround in TFP performance in the recent period reflects in part changes in policy and institutions.
South Africa	Jonsson and Subramanian (2001)	The paper examines the empirical relationship between trade and TFP in South Africa. Using data on trade protection across different manufacturing sectors, it shows that trade liberalization had a positive impact on TFP growth during the 1990s. In addition, times series analysis supports a positive long-run relationship between TFP and openness.
Swaziland	Erasmus and Ricci (2003)	The paper analyzes the sources of Swaziland's growth during 1980-2001, using a growth accounting framework. The analysis suggests that the country's rapid growth prior to 1994 was due to factor accumulation, but especially to capital accumulation. The more muted growth performance since 1994 was due to a decline in the contribution of both factor accumulation and TFP growth, particularly capital accumulation. During 1994-2001, TFP growth accounted for half of overall output growth.

Appendix I (continued): Selected Literature Survey

Countries	Author(s)	Main Results
Africa (22 countries)	Nkurunziza and Bates (2003)	The paper finds that political instability adversely affected economic growth over the period 1960-1990.
Sub-Saharan African	Calamitsis, Basu, and Ghura (1999)	The study analyses the factors affecting economic growth in sub-Saharan Africa, using data during 1981-97. The results indicate that per capita real GDP growth is positively influenced by economic policies that raise the ratio of private investment to GDP, promote human capital development, lower the ratio of the budget deficit to GDP, safeguard external competitiveness, and stimulate export volume growth. The favorable evolution of these variables played an important role in the region's apparent post-reform recovery of 1995-97.
Africa	Fosu (2001).	The paper sheds light on the importance of the international dimension for African economic growth. The beneficial effects of exports are confirmed for African economies, though available evidence suggests that it is the manufacturing component that seems to really matter for growth. International shocks in the form of terms of trade decline, economic instabilities of capital (investment) and imports, world interest rates, real exchange rate misalignment, diminishing external aid flows into countries with sound policies, external debt, and high export taxes all appear to exercise adverse implications for growth in Africa.
Sub-Saharan African (44 countries)	Gyimah-Brempong and Traynor (1999)	The paper confirms a statistically significant inverse relationship between political instability and economic growth in sub-Saharan Africa.
West Africa	Sacerdoti, Brunschwig, and Tang (1998)	The paper investigates the impact of human capital on growth in West Africa. Using a growth accounting methodology, it distinguishes the sources of growth between the accumulation of factors of production and changes in production intensity or efficiency. The paper also identifies terms of trade, trade openness, the government deficit, and the share of government investment in total investment as key policy variables affecting growth.

Appendix I (continued): Selected Literature Survey

Countries	Author(s)	Main Results
Sub-Saharan Africa	Rodrik (1998)	The paper focuses on the role of trade and trade policy in achieving sustained long-tern growth in sub-Saharan Africa. It concludes that trade policy in the region works much the same way as it does elsewhere. High levels of trade restrictions have been an important obstacle to trade. Concerns that Africa's poor infrastructure, geography, or dependence on a limited number of primary products make it a special case in which exports are not responsive to price or to traditional instruments of commercial policy. At the same time, the effects of trade policy on economic growth seem to be indirect and much more modest. The fundamentals for long-term growth are human resources, physical infrastructure, macroeconomic stability, and the rule of law.
Sub-Saharan Africa	Sachs and Warner (1997)	Using data for sub-Saharan African countries during 1965-1990, the paper finds that the region's slow growth can be explained by poor economic policies, most importantly the lack of openness to international markets. In addition, geographical factors such as lack of access to the sea and tropical climate have also contributed to the slow growth.
Sub-Saharan Africa	Ghura and Hadjimichael (1996)	The paper investigates empirically the determinants of per capita economic growth for a large sample of sub-Saharan African countries during 1981-92. The results indicate that (1) an increase in private investment has a relatively large positive impact on per capita growth; (2) growth is stimulated by public policies that lower the budget deficit in relation to GDP (without reducing government investment), reduce the rate of inflation, maintain external competitiveness, promote structural reforms, encourage human capital development, and slow population growth; and (3) per capita income converges after controlling human capital development and public policies.
World (21 sub-Saharan African countries included)	Senhadji (2000)	A growth accounting exercise is performed for 88 countries with data during 1960-94 to examine the sources of cross-country differences in TFP levels. The sources of the lower growth in Africa relate to both lower physical and human capital accumulation, as well as lower TFP growth (in relation to the other regions).

Appendix I (concluded): Selected Literature Survey

Countries	Author(s)	Main Results
World (21 sub-Saharan Africa countries included)	Bosworth, Collins, and Chen (1995)	The paper uses a combination of growth accounting and regression analysis to examine the economic growth experience of 88 developing and industrial countries over the period 1960-92. The decomposition shows that increases in TFP have been small in developing countries, and that accumulation of physical and human capital account for most of the growth per worker. The results show that Africa stands out as a case where output per worker has increased by an average of only 0.5 percent over the past three decades, and TFP growth has been negative.