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Sustaining Growth Accelerations and Pro-Poor Growth in Africa

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African Department

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Abstract

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Are improvements in growth in Sub-Saharan Africa (SSA) since the mid-1990s sustainable? What types of growth strategies contribute the most to reducing poverty? This paper examines these questions in four stages. First, it explores the factors contributing to the post-1995 improvement in growth. Second, to shed some light on factors associated with substantial jumps in growth rates that are sustained in the medium term, an analysis of the correlates of growth accelerations is presented. Third, the paper examines the consistency of the SSA data with some important predictions from the literature directly linking such areas as fiscal policy, financial development, or institutions and growth. Fourth, it reviews recent evidence regarding lessons on the type of growth process that is most effective at raising the incomes of the poor.

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I. INTRODUCTION

Are improvements in growth in Sub-Saharan Africa (SSA) since the mid-1990s sustainable? What types of growth strategies contribute the most to reducing poverty? This paper examines these questions in four stages. First, it explores the factors contributing to this recent improvement in growth. To what extent is the growth recovery driven by favorable external conditions? Have improved policies played an important role? Has the improved growth performance been accompanied by improvements in investment, productivity growth, and basic institutions, suggesting a more durable foundation? How do these factors explain differences in performance across subgroups in the region? Which countries can be identified as the strongest performers? The analysis throughout considers correlations, since many of the factors considered are themselves strongly influenced by output growth, making it difficult to establish causal relationships.

Second, although the recent improvement in growth is encouraging, it is insufficiently strong to put SSA on a path to make substantial reductions in poverty, as set out in the Millennium Development Goals (MDGs). To shed some light on factors associated with substantial jumps in growth rates that are sustained in the medium term, an analysis of the correlates of growth accelerations is presented. What explanatory factors are different for a country during an acceleration episode? Is it possible to identify triggering factors that help explain the timing of a growth acceleration? Can the incidence and timing of accelerations be predicted well?

Third, the paper examines the consistency of the SSA data with some important predictions from the literature directly linking such areas as fiscal policy, financial development, or institutions and growth. Is there evidence of a nonlinear relationship between fiscal deficits and growth in SSA? Do fiscal consolidations that reduce reliance on domestic financing, and changes in the composition of spending increase growth? How robust and strong are the links between infrastructure and growth? What are the broad trends on correlations between financial development indicators and growth in SSA? Is financial development more strongly correlated with growth in conditions of macroeconomic stability? What is the correlation between improvement in basic institutions and growth in SSA? Are improvements in political institutions and improvements in economic institutions strongly correlated over time?

Fourth, while growth is the long-run key to poverty reduction, there is significant short-run variation across SSA in the magnitude of growth's effect on poverty. In addition, in the long run, growth is more likely to be sustainable if there is greater equity in opportunities for all segments of the population to participate in the benefits of growth.² Focusing on macroeconomic issues, we review recent evidence regarding lessons on the type of growth process that is most effective at raising the incomes of the poor. What is the role of the rate of growth, the response of poverty to that growth, and changes in inequality in explaining

² The main message of the 2006 *World Development Report* is that greater equity is complementary to sustainable growth and development (World Bank, 2005).

changes in poverty in SSA? What do country case studies tell us about macroeconomic policies and conditions conducive to pro-poor growth?

It is beyond the scope of this paper to review the very extensive literature on growth in Africa. We note, however, that the literature has evolved from offering monocausal explanations for Africa's stagnation (geography, ethnic fractionalization, or poor policies, for example) to suggesting that the wide diversity of performance indicates a complex set of factors at play. The literature has generally converged on the view that Africa does not grow differently from other regions; rather, Africa is particularly disadvantaged and has the poorest record on the factors that drive the growth process worldwide.³ New modes of analysis have also shed light on the growth process in Africa. A comparison of the aggregate growth regression evidence with the microeconomic literature suggests that high risk (policy and exogenous volatility), a lack of openness to trade, weak institutions, and poor public services are key constraints to growth in SSA. A new method for identifying robust explanatory variables finds that poor health indicators, ethnic diversity, expensive investment goods, low levels of education, excessive government expenditure, and a lack of openness contributed the most to SSA's growth shortfall relative to the rest of the world.⁴

Recent papers have suggested that opportunities for growth vary among African countries, depending on the availability of natural resources and location, as well as the external environment, inherited institutions, and the prevalence of disease. According to this view, political and policy choices in the face of these economic opportunities are what determine countries' growth outcomes. For example, growth opportunities may be quite different in resource-abundant countries, coastal countries without natural resources, and landlocked countries without natural resources.⁵ This paper recognizes that in an analysis of the diversity of growth experiences, other exogenous and endogenous structural characteristics of African economies could also be at play: membership in the CFA franc zone, whether a country is involved in conflict, and whether it has an IMF-supported program.

II. EXPLAINING DIFFERENCES IN GROWTH PERFORMANCE

A. Understanding the Post-1995 Improvement in Growth

The stylized facts of growth during 1960-2003 are sobering. For the region as a whole, real GDP grew at an average rate of 3.7 percent a year, and real GDP per capita grew at 1.1 percent.⁶ Real per capita income is approximately the same as in the mid-1970s. Because

³ Extensions of the standard growth model have largely eliminated the "Africa dummy" in cross-country growth regressions. See Sachs and Warner (1997), Easterly and Levine (1997), Hoeffler (2002).

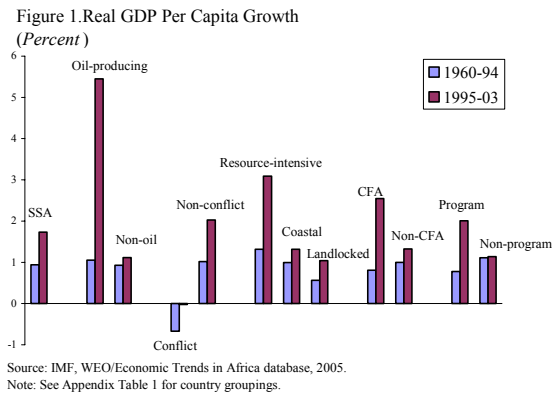
⁴ Collier and Gunning (1999); and Artadi and Sala-i-Martin, (2003).

⁵ Collier and O'Connell (2004) suggest that a key factor accounting for Africa's increasing divergence from growth experiences in the rest of the developing world since 1980 is the underperformance of Africa's coastal resource-scarce economies relative to similar countries in other regions. See also O'Connell (2004).

⁶ Unweighted averages for 42 countries of the IMF African Department; Eritrea and Liberia are excluded because of data limitations.

of very weak overall growth, Africa’s real GDP per capita has steadily lost ground relative to both industrial and other developing country regions. While there have been periods of fast growth in many individual countries, only five countries (Botswana, Equatorial Guinea, Mauritius, the Gambia, and Swaziland) have registered an average growth rate of at least 5 percent. Equatorial Guinea is a special case of oil boom beginning in the 1990s; only Botswana and Mauritius have consistently grown at rates exceeding the long-run mean for developing countries. Growth rates in Africa also tend to be more volatile than in other regions, particularly at short and medium horizons. Growth-accounting decompositions show that average total factor productivity (TFP) growth for SSA has declined in every decade since 1970⁷, which has been called the primary reason for SSA’s slow growth.⁸

There has been a strong improvement in economic growth since the mid-1990s. SSA’s average real GDP per capita growth increased to 2.0 percent in 1995-99, from –1.1 percent in 1990-94, an improvement shared by all subgroups (Figure 1). The number of countries with real GDP growth rates exceeding 5 percent increased from 4 to 15. However, during 2000–03, growth slackened somewhat for all subgroups except oil producers and resource-intensive countries, where it was driven by the 21.6 percent growth in Equatorial Guinea, and conflict countries, where it was driven by the post-conflict recovery in Sierra Leone. The post-1995 growth recovery has been fueled by a significant increase in TFP growth. We consider below the factors accounting for the strong growth in the fastest-growing economies of the 1990s—that is, those whose real GDP per capita growth rates place them in the top third of the distributions (See Appendix Table A2).⁹



⁷ See Tahari and others (2004), Bosworth and Collins (2003). The following sections use TFP data kindly provided by Tahari and others.

⁸ Country-level growth-accounting studies conducted in the IMF’s African Department support these findings (for example, Republic of Congo: Ghura, 2004; Kenya: Cheng, 2004; Swaziland: Erasmus and Ricci, 2002; WAEMU countries: Wane, 2004). Nsengiyumva (2004) on Benin and Bagattini (2004) on Zambia find that structural reforms and an increased role for the private sector contributed to improvements in TFP in recent periods. Sectoral-level growth-accounting studies have also shed light on sector-specific growth constraints (Democratic Republic of Congo: Akitoby and Cinyabuguma, 2005; South Africa: Arora, Bhundia, and Bagattini, 2002). See Calamitsis, Basu, and Ghura (1999) for an analysis of factors affecting growth using an SSA-specific cross-country growth model.

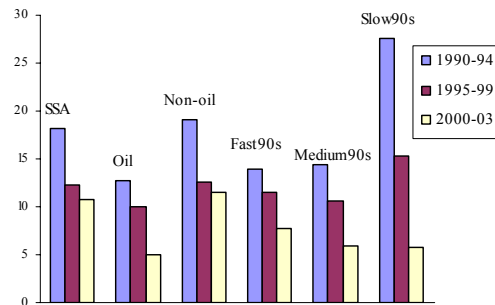
⁹ The top third of the distribution includes 14 countries. Of these, 1 is an oil producer, 4 are CFA franc countries, and 9 have an IMF-supported program. On the natural resources/location classification, 2 are resource-intensive, 6 are coastal and resource-scarce, and 6 are landlocked and resource-scarce countries.

Higher growth rates in the 1990s were accompanied by improved macroeconomic indicators (Figures 2 and 3). The average inflation rate in economies that grew the fastest during the 1990s was 12 percent, compared with an average of 21 percent in the slowest-growing economies.¹⁰ Despite spending roughly the same as slow-growing economies as a ratio to GDP, fast-growing economies exhibit lower fiscal deficits including grants because of their higher revenue collections. There is no doubt that the region's stronger terms of trade growth since the

second half of the 1990s has also contributed to the growth recovery. However, the fastest growers of the 1990s do not appear to have experienced more favorable terms of trade growth. They were, however, more open to trade, as indicated by higher ratios of exports plus imports to GDP (Figure 4).

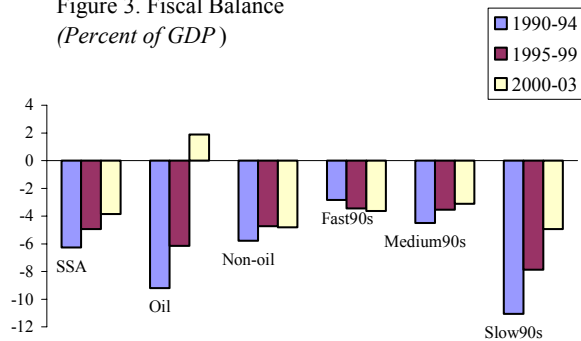
Different aspects of the late 1990s growth recovery give mixed signals about its sustainability. On the negative side, except in the oil-producing countries, total and private investment has, on average, barely increased. Excluding Equatorial Guinea's unique investment rates of 90 percent of GDP in the late 1990s, the fast-growing economies still had slightly better total investment than the medium or slow growers, and maintained it in 2000-03. Investment rates were also higher in non-CFA franc countries (again excluding Equatorial Guinea), but the differential eroded in the most recent period. The positive news is that TFP growth, although moderating in the most recent period, improved strongly in the second half of the 1990s for the first time since the 1960s.¹¹ The fast growers of the 1990s registered TFP growth of 2.3 percent in the second half of the decade (3.3 percent including

Figure 2. Annual Inflation Rate (Percent)



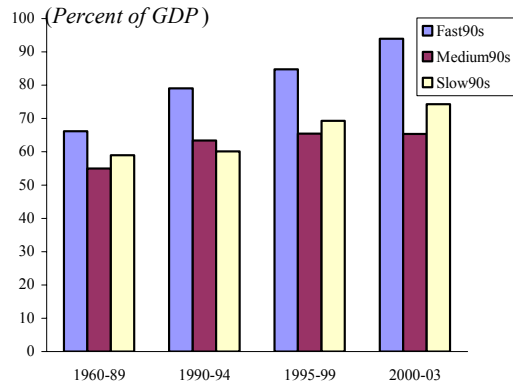
Source: IMF, WEO/Economic Trends in Africa database, 2005.

Figure 3. Fiscal Balance (Percent of GDP)



Source: IMF, WEO/Economic Trends in Africa database, 2005.

Figure 4. Trade Openness in the Fast, Medium, and Slow Growers of the 1990s (Percent of GDP)



Source: World Bank, World Development Indicators database 2004.

¹⁰ The average figures exclude the instances of hyperinflation in Angola for the fast growers and in the Democratic Republic of Congo for the slow growers.

¹¹ This trend is robust to the exclusion of Equatorial Guinea.

Equatorial Guinea), while TFP growth in the other two performance groups was negative, or below 0.7 percent. These increases in TFP growth were significantly influenced by improvement in countries with on-track¹² IMF-supported programs (Appendix Table A3).¹³ It is important to note, however, that standard estimates of TFP growth for oil-producing countries, given the structure of their economies, are problematic. While the progress on TFP growth in SSA is less strong when oil producers are excluded, the positive results for the fast growers of the 1990s and for countries with on-track Fund programs are not affected. (See Box 1 on the varied growth experiences in three countries and challenges relating to productivity improvements, responses to shocks, and management of oil revenues.)

Many of the inferences noted above are also supported by robustness analyses of cross-country growth regressions. Recent papers use a new Bayesian technique to address uncertainty about which explanatory variables belong in the model and to address endogeneity of these variables (in the second reference) (Sala-i-Martin, Doppelhofer, and Miller 2004; Tsangarides, 2005). Using a world sample, an extension of the latter found that, in addition to initial conditions, the following variables were robustly correlated with growth: factor accumulation (investment and education); policy variables (inflation, fiscal balance, government consumption, black market premium); and fixed geographical and exogenous factors (percentage of land in the tropics, arable land, and terms of trade growth).

The results of the cross-country growth analysis suggest that Africa's growth has been substantially lower than that of other regions on account of weak policies, but lower levels of factor accumulation, particularly investment, have implied extremely large growth losses compared with other regions. Clearly, however, lower factor accumulation in SSA is also partly the consequence of weak policies. Appendix Table A4 shows that SSA's growth could have been about 2 percentage points higher every year if policies had been as strong as those in other developing country regions, such as Latin America or South Asia, and these shortfalls increased slightly in the 1990s. But, strikingly, the estimates suggest that annual growth in SSA could have been substantially higher if it had been able to achieve the same factor accumulation rates—mainly investment—as other developing countries.

Higher growth in the second half of the 1990s than in earlier periods reflects the contribution of improved policies.¹⁴ Appendix Table A5 shows that the fast growers' improvement in

¹² For 1990-2003, a program country is designated as "off-track" if half or more of its programs in a given five-year period experienced an irreversible interruption; that is, the program was either canceled or allowed to lapse because of policy slippages. Data from Nsouli, Atoian, and Mourmouras (2004) (see for more details on index derivations) were extended to cover all SSA program countries.

¹³ Higher TFP growth in countries with on-track programs may reflect better implementation of macroeconomic and structural policies. However, the causality between IMF program implementation and growth is difficult to ascertain (see Nsouli, Atoian, and Mourmouras, 2004). It is also possible that countries that experience higher growth because of external factors are better able to implement IMF programs.

¹⁴ Improvements in macroeconomic policy have continued in recent years. Table A6 shows that based on IMF staff estimates, the quality of macroeconomic policies in 2003-2004 is stronger in program than nonprogram countries, and also strong in countries with on-track programs compared with those off-track programs. The macroeconomic policy scores cover monetary and fiscal policy, and transparency of public sector institutions.

growth relative to the early 1980s reflected the combined positive impact of the policy variables, as well as a small positive contribution from the terms of trade.¹⁵ The contribution from investment, however, was smaller (and had a negative effect on growth for medium and slow growers). The result showing the contribution of policies to growth for fast growers is propelled by the large improvement in the robust policy variables in countries with on-track IMF-supported programs. However, declines in investment for this group had a negative impact on growth. While investment declines negatively affected growth in CFA franc countries, small increases contributed positively to growth in non-CFA franc countries.

¹⁵ Equatorial Guinea is excluded, and results would be even stronger had it been included. Note also that results are somewhat different depending on whether changes are measured relative to the early 1980s, late 1980s, or early 1990s.

Box 1. Growth Experiences: Uganda, The Gambia, and Nigeria

For *Uganda*, the role of productivity gains is key to the sustainability of growth.¹ Uganda has enjoyed a sustained post-conflict recovery, characterized by impressive growth in real GDP (6.2 percent between 1986/87 and 2003/04, although, with very high population growth rates, per capita growth rates have been relatively moderate) and substantial reductions in the incidence of poverty. However, growth-accounting analysis and recent sectoral studies of agriculture and manufacturing show that the contribution of TFP growth has been extremely low. Capital accumulation explains about 85 percent of real GDP growth since the mid-1980s. Because increasingly higher investment rates (and, consequently, rising national or external saving) are not feasible, low TFP growth seriously threatens Uganda's achievement of sustained high growth and poverty reduction. Sustainable high growth will require a structural reform agenda aimed at increasing productivity and gradually increasing investments by addressing such investor concerns as corruption, high transportation costs, erratic electricity supplies, and inadequate access to financial resources.

The volatility of growth declined substantially in *The Gambia*—and was, in fact, lower than that of all of SSA—during the period of comprehensive reforms (1985-95), underscoring the importance of appropriate policies in helping to mitigate the impact of shocks.² While limited diversification makes the economy particularly prone to external shocks, frequent setbacks to economic reforms have contributed to growth volatility. Growth has been constrained by inappropriate policy responses to shocks, the existence of various policy distortions, and recurrent slippages in fiscal policy, which have fueled inflation and tended to increase the government's recourse to domestic bank financing and to crowd out private investment. For example, while in the period following the military coup (1995-2001) many of the previous policy gains were quickly eroded, fiscal and trade reforms in the latter part of the period contributed to reviving growth, building on the foundation of earlier reforms. However, growth was derailed again by further fiscal slippages associated with elections and by governance problems. Sustained efforts to strengthen governance, maintain fiscal discipline, and strengthen public expenditure management are necessary for maintaining competitiveness and creating an enabling environment for private investment, which should lower growth volatility.

In *Nigeria*, more effective use of oil revenues could both better insulate the economy against the booms and busts of oil production and rejuvenate the non-oil economy. Nigeria's poor per capita growth performance can be traced directly to the discovery of oil in the 1960s. Oil wealth resulted in a positive terms of trade shock and real exchange rate appreciation, which, in turn, undermined the competitiveness of non-oil exports. The labor-intensive sectors of agriculture and light manufacturing have undergone a structural decline, contributing to the deterioration in social indicators. In addition to oil, weak institutions and misguided policies—resulting in a lack of personal and property security, poor governance, and corruption—have also impeded growth in Nigeria. Moreover, spending on infrastructure (necessary for better farm-to-market roads and an efficient and reliable power supply, for example) has been inadequate and of poor quality. The current government is embarking on its own National Economic Empowerment and Development Strategy (NEEDS), with reforms that center on improving the management of oil revenues; enhancing the efficiency and effectiveness of government spending; improving public sector governance, including addressing corruption related to oil rents; and focusing on policies that will spur the non-oil economy. These are the right priorities; clearly, implementation is challenging.

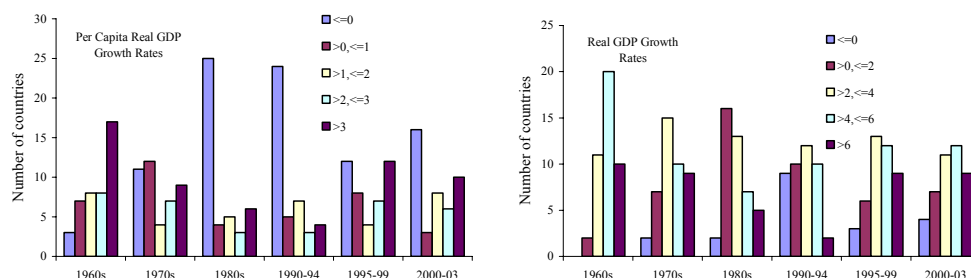
¹Mikkelsen (2005).

²Randall (2005, forthcoming).

B. Identifying Strong and Weak Growth Performers

Since different methods of averaging growth performance across subgroups should be interpreted differently, it is also useful to examine the distribution of

Figure 5. Sub-Saharan Africa: Frequency Distribution of Per Capita Real GDP and Real GDP Growth Rates (Percent)



Source: IMF, *World Economic Outlook* database, 2005.

growth rates at the country level. Box 2 shows that comparisons of average growth rates across subgroups differ somewhat depending on whether averages are unweighted, GDP-weighted, or population-weighted. Interpreting the effects of weighting is not an issue when we examine the distribution of growth rates by country. Strong growth in a few countries or a particular subgroup, such as the oil producers, has not been primarily responsible for the region's improvement in growth performance since the mid-1990s; rather, growth has improved in a wide range of countries. A frequency distribution of countries, charted over different intervals of real per capita growth, shows that the percentage of countries with zero or negative rates declined from 58 percent in the 1980s to 12 percent in 1995–99 and 16 percent in 2000–03. At the other end of the distribution, the share of countries with real per capita growth rates above 3 percent increased from 14 percent in the 1980s to 28 percent in the second half of the 1990s and to 23 percent in 2000–03 (Figure 5).

The top third of the distribution of per capita growth rates in the 1990s includes some countries that have consistently been relatively strong performers and other countries that have moved up since the 1970s and 1980s, when they were in the lower end of the distribution (Appendix Table A2). Focusing on the latter, notable “new” fast growers in the 1990s include such countries as Benin, Ghana, Mali, Mozambique, and Uganda. However, as discussed in Section III, although a good number of countries have achieved strong growth over some period, sustaining the strong performance is much more difficult.

Another way to identify good and poor growth performers is to benchmark countries' performance relative to a set of exogenous opportunities. As mentioned in the introduction, a useful framework proposed in recent studies suggests that opportunities for growth vary among African countries (depending on availability of natural resources, location, and other characteristics) and that it is important to understand how their political and policy choices in the face of those opportunities have determined growth outcomes. Collier and O'Connell (2005) note that location and resource availability shape the growth opportunities and constraints of all developing countries, and they suggest a grouping of countries as resource abundant, coastal without resources, and landlocked without resources. Conceptually, O'Connell (2004) suggests that a second important dimension (for SSA) is the extent of regionally based political polarization present at the time of independence, which strongly influenced continuing politics of distributional conflict. For example, some countries

emerged at independence with a highly polarized politico-economic structure, with a few large groups struggling for control of resources.¹⁶ Considering countries' actual growth performance in the face of opportunities can provide a useful lens for evaluating successes and failures. One example is Uganda, whose success as one of the fast-growing SSA countries in the 1990s is more striking given that it is landlocked (and transport costs are thus high) and came to independence with deep regionally based cleavages.

Growth benchmarking is a simple way to evaluate countries' growth performance relative to their opportunities. Growth performance was assessed above on the basis of actual real GDP per capita growth rates; a fuller assessment can be provided when African countries' growth is compared with what would have been expected given the structural and external conditions they face. Benchmarking compares predicted growth rates based on country circumstances with actual growth and draws attention to unusually large differences between actual and predicted performance (O'Connell, 2004). Using a set of exogenous growth determinants, we estimate a panel regression for the period 1960–2000¹⁷ for a set of 60 developing countries. In addition to geographic dummies (share of land in the tropics), two cross-sectional explanatory variables are included: (1) a trade gravity measure, the predicted ratio of trade to GDP in 1988, which is an exogenous (since it is aggregated up from a gravity model) determinant of exposure to trade and (2) a settler mortality variable, which may capture institutional quality or current health conditions. These variables are augmented by time-varying but exogenous (at the country level) variables: growth in trade partners, growth in the terms of trade, a set of time dummies, and initial GDP levels (convergence effects).

Big differences between actual and predicted growth as determined by the benchmarking methodology are broadly consistent with what is known about country experiences. But, although the lost opportunities of resource-rich countries are well known, there are also countries that have done relatively well despite, for example, being landlocked or poor in resources. As expected, the full sample results show some tendency for the good and bad performers relative to the benchmark to be the good and bad performers overall. Botswana and Mauritius on the positive side and the Central African Republic and Zambia on the negative side fall into this category. These countries are ranked in both the top (bottom) 10 of actual growth and the top (bottom) 10 of differences between actual and predicted growth (growth surprises).¹⁸ Nevertheless, the technique highlights other countries that outperformed their benchmark over the full period, including The Gambia and the Republic of Congo. Conversely, South Africa and Ethiopia are identified as big underperformers.

For the 1990s, benchmarking identifies several countries whose growth experiences, albeit modest overall, were better than difficult circumstances suggested were possible. The

¹⁶ However, in the empirical implementation of growth benchmarking, it is not possible to include initial political polarization, because proxy variables for a global sample have not been developed.

¹⁷ The panel contains eight subperiods, five years in length (six years for the 1995-2000 subperiod).

¹⁸ See Appendix Table A7 for the ranking of actual real GDP per capita growth rates by country over different subperiods.

composition of the over- and underperformers changes somewhat for the period 1990–2000 relative to the full sample. Burkina Faso, Ghana, and Mozambique move into the top 10 growth surprises, and Uganda moves to the top of this list overall. In addition to the expected presence of conflict-racked countries in the bottom 10 of the 1990s, Cameroon appears as a very large underperformer of that period. While conflict and resource dissipation play a major role in the negative growth surprises, there is a potentially informative cluster of medium but steady growers in the positive growth surprises (Benin, Ghana, and Mali) in addition to the usual rapid growers in this group. When “success stories” are selected by their rates of overall growth, these cases are not at the top of the list.

Box 2. Effect of Alternative Weighting Methods on Growth Comparisons

While SSA growth rates are conventionally aggregated to the regional level through simple averaging, it can be useful to consider other weighting schemes. Collier and O’Connell (2005) have proposed that growth statistics for SSA can be presented using population weights, which try to capture the experience of the typical African. Alternatively, one may consider weighting by GDP, which takes account of the relative sizes of economies in the sample and is often used for regional or global aggregates. Either method can help take account of the large variations in country size and drivers of growth, whereas the simple average may be influenced by extremely large growth rates in small-population, resource-rich countries. Nevertheless, simple averaging has the virtue of giving equal weight to each policy unit and is thus particularly relevant for aggregating policy variables.

Calculating weighted average growth rates moderates the effect of rapidly growing small economies on comparisons of different categories. For example, the fast growers of the 1990s grew at nearly 6 percent in 1995–99 under simple averaging, but at about 4 percent if weighted by GDP and population (Appendix Table A8). Relatedly, improvements in growth within a category over time look smaller if weighted by GDP or population than if measured by simple averaging. The fast growers of the 1990s saw growth jump by nearly 4 percentage points between the first and second half of the decade under simple averaging, but in the range of 2–2.5 percentage points for the alternative weights. This indicates that, within this category, the upper range is dominated by small economies. Interestingly, the deterioration in growth between 1995–99 and 2000–03 for countries with off-track programs looks much more severe under GDP or population weights than under simple averaging. This suggests that program deviation has recently tended to occur in countries that are comparatively large (whether by population or by GDP).

Weighted averages across standard subregional categories further highlight the influence of small oil producers on the African growth record. The wide divergence between oil and non-oil countries for unweighted averaging is far smaller under the alternative weights, and the growth advantage of CFA countries based on unweighted growth rates is either smaller or reversed under alternative weighting. The non-CFA growth rate changes only modestly across the three methods, indicating that weighting changes within the CFA category are driving this comparison.

III. GROWTH ACCELERATIONS

Very large and sustained increases in growth rates are necessary if Sub-Saharan Africa (SSA) is to have a realistic prospect of halving income poverty by the year 2015. To meet the poverty MDG, SSA’s real GDP growth rates will have to double from a base scenario to about 7.5 percent.¹⁹ Although knowledge about what leads to sustainable, large accelerations

¹⁹ Most SSA countries are not on track to meet the income poverty MDG. Already the highest in the world, SSA poverty rates increased during the 1990s. Of the 28 countries for which household surveys are available,

(continued...)

of growth in SSA is limited, it is instructive to look at some recent success stories within the framework of growth accelerations. A paper by Hausmann, Pritchett, and Rodrik (2004) (hereafter HPR) has proposed that the traditional focus of empirical growth research on long-horizon or panel-data-growth regressions can camouflage important medium-term patterns in a country's growth. By looking at jumps in countries' medium-term growth trends, they argue, one can gain insight into the sources of successful growth transitions. In addition, standard methods do not directly address a policymaker's key question: how likely is it that a particular country will experience a growth acceleration that is sustained for a period of time?

The recent *Regional Economic Outlook* (IMF 2005b), henceforth *REO* for Sub-Saharan Africa found that countries that have experienced jumps in their growth rates have registered improvements in broad measures of their policy stance and institutional quality. Accelerations appeared to operate via the trade channel, and were accompanied by increases in investment and productivity. Within this group of accelerations, those that were sustained for ten years had stronger trade and investment, lower debt burdens and higher aid, and more democratic institutions than countries that did not sustain their accelerations.

While the *REO*'s findings were supported by bivariate analysis (reviewed in section II.A), it is shown here that the broad messages are maintained in a multivariate extension. Two types of investigation are undertaken. The first is a direct analog of the *REO* bivariate correlations which relate the event of being in an acceleration episode to a range of possible explanatory or associated factors (III.B). The second seeks to explain the *timing* of an acceleration in terms of a small set of potential triggering factors (III.C). The analysis then turns to comparing an important subset—sustained accelerations—with those that are not, in terms of both associated and triggering factors (III.D). This section finds a robust association between growth accelerations and the trade channel, measures of policy and institutional quality, and productivity growth; in addition, sustained episodes are associated with lower debt burdens. Episodes are triggered by political transitions and economic liberalizations.

A. Identification and Bivariate Correlates of Accelerations

Growth accelerations are identified by a comparison of backward- and forward-looking per capita growth rates calculated over a moving window for each country. HPR compare seven-year forward- and backward-looking growth rates of per capita GDP from a given year. An acceleration is identified when the forward-looking rate exceeds the backward-looking rate by at least 2 percent, and the jump is to a level of at least 3.5 percent, with an additional proviso that post-acceleration GDP level must exceed pre-acceleration GDP level (to exclude crisis recovery periods). In the interest of focusing the analysis on more recent experiences, this study uses IMF *World Economic Outlook* real GDP per capita (PPP) data from 1980-2004, rather than PWT data (only available until 2000), and shortens the acceleration window to five years, allowing identification of acceleration episodes beginning up to 1999. Given lower average SSA growth rates than in the full developing country sample of HPR, while in our definition an acceleration still requires a jump in per capita

only 5 seem well positioned to meet the poverty goal (Cameroon, Ethiopia, Senegal, South Africa and Swaziland), with two others relatively close (Mauritania and Mozambique) (World Bank and IMF, 2005).

growth over a 5 year window of at least 2 percent per annum, the cutoff for the post-jump growth rate is 2 percent (rather than 3.5 percent). The requirement that the level of GDP per capita must exceed the pre-acceleration level is retained.

This method identifies 34 growth acceleration episodes in the region since 1980, with more such episodes in the 1990s than in the 1980s, including several episodes currently under way. Episodes occur in countries at all levels of per capita income. The original HPR cutoffs would produce 22 accelerations in total, of which 8 are in the 1980s (indicated by an asterisk in Table 1). In the benchmark set, 6 countries experience two accelerations over the full period, indicating nonetheless that accelerations are a surprisingly widespread phenomenon. Equally however, the presence of accelerations in 28 separate countries over this period of sluggish overall growth points to the difficulty in sustaining them beyond the five year period. This motivates interest, pursued in the probit models below, in analyzing sustained accelerations as well as examining whether the same factors are associated with the accelerations identified by the tighter HPR filter, as for the benchmark set.

Table 1. Acceleration Start Dates and Per Capita Growth Rates for 1980s and 1990s

	1980s				1990s		
	Start date	Episode growth	Post-episode growth		Start date	Episode growth	Post-episode growth
Botswana*	1986	7.7	1.2	Angola*	1993	4.9	2.6
Burkina Faso	1983	3.3	2.9	Benin	1993	2.2	2.0
Burundi	1983	2.4	-0.1	Botswana*	1996	4.7	..
Chad*	1983	3.3	1.4	Burkina Faso*	1994	4.7	3.2
Congo, Rep. of*	1984	5.2	-2.7	Cape Verde*	1992	4.5	5.1
Gabon	1986	2.9	0.5	Chad*	1999	8.3	..
Ghana	1983	2.9	2.0	Côte d'Ivoire*	1993	2.3	-4.2
Kenya	1984	2.5	-1.6	Equatorial Guinea*	1994	29.7	18.5
Lesotho*	1986	4.2	2.8	Ethiopia*	1992	3.8	1.4
Mauritius*	1984	7.3	5.6	Gambia, The	1995	2.2	..
Mozambique*	1986	6.0	2.4	Guinea	1994	2.3	0.0
Seychelles*	1987	5.7	2.6	Malawi*	1994	4.8	-3.5
Tanzania	1985	2.3	-1.6	Mozambique*	1994	7.1	5.1
Uganda*	1986	3.9	4.1	Rwanda*	1996	2.6	..
Zimbabwe	1986	2.6	-1.2	Senegal	1994	2.2	1.5
				Seychelles	1995	7.5	..
				Sierra Leone*	1999	10.9	..
				Tanzania*	1999	4.0	..
				Zambia	1999	2.1	..

Source: IMF staff calculations from World Economic Outlook database, 2004.

Notes: GDP per capita data in U.S. dollars. Acceleration episodes last five years and are identified as described in text. Post-episode growth refers to the annual growth rate in the five years after an episode ends. Since an episode itself lasts five years, post episode growth rates can not be calculated for accelerations after 1994. A sustained acceleration (shaded) is one where the average per capita growth was at least 2 percent for five years after an acceleration ends. All growth rates are calculated by a regression of per capita income on a constant trend. An asterisk indicates accelerations where the growth exceeds the 3.5 percent cutoff of Hausman and others (2004). For Chad this cutoff dates are the acceleration to 1981 while for Rwanda it begins in 1994.

Empirical investigation sought to identify determinants of accelerations during the 1980s and 1990s using bivariate analysis. A broad range of explanatory variables covering macroeconomic stability, trade, debt, institutions, capital, and geography were examined, some of which can be thought of as triggering an acceleration, and some of which enable an acceleration to continue. We first examine the correlates of accelerations using bivariate analysis, which is useful to give an overall sense of the relationships in the data. However, given the limitations of bivariate analysis, robustness of the findings are verified using multivariate probit models in subsequent sections.

Findings in Table 2 are based on a comparison of average values of economic variables during the acceleration episodes with those during times when there was no acceleration, as well as relative to the period prior to an acceleration, augmented by formal tests of statistical significance. In interpreting the results, one should bear in mind that the analysis is limited to correlations, not causal determinants; it is difficult to distinguish between the causes and the consequences of accelerations.

Table 2. Differences Between Sample Averages for Acceleration Episodes: Own Past and Nonepisodes

	1980s		1990s	
	Accelerations vs. nonaccelerations: during	Accelerations: during vs. before	Accelerations vs. nonaccelerations: during	Accelerations: during vs. before
Macroeconomic				
Inflation	-2.7	-5.6 *	-1.9	-2.3
Central govt. bal. to GDP	2.4 *	1.4 *	-0.9	0.5
REER, percent change	-6.0 *	-9.9 *	-1.8	-2.0
REER, percent change, non-CFA	-8.5 *	-14.3 *	-1.0	-1.3
CPIA	0.3 *	0.3 *	0.2 *	0.03
Trade				
Partner growth	0.3 *	1.1 *	0.3 *	0.3 *
Sachs-Warner (updated)	—	0.03 *	0.04 *	0.02
Real export growth	10.2 *	14.4 *	5.8 *	6.5 *
Debt				
Debt service	0.7	9.1 *	-2.4 *	-4.3 *
Debt/GDP	-39.3 *	27.6 *	5.6	8.8
NPV of debt growth	0.8	-9.4	-4.0 *	-3.8 *
NPV of debt/exports	0.3	1.5 *	0.3	0.1
Institutions				
Polity index	1.1 *	-2.1 *	0.2	3.9 *
Longtime leader change	0.2	0.6	1.1 *	1.1
Capital and productivity				
Investment to GDP	1.8 *	-1.4	6.1 *	6.0 *
TFP growth	0.03 *	0.03 *	2.3 *	3.3 *

Source: IMF staff calculations.

Note: Asterisk (*) indicates that the difference in means was significant in at least a one-tailed test at 10 percent.

Growth accelerations do not come at the expense of macroeconomic stability; inflation and budget deficits are either insignificantly different or better in acceleration episodes than in control groups. Inflation is slightly lower during the episodes of accelerated growth, but not significantly so, and the episodes of the 1980s also feature better central government budget balance, including grants. Furthermore, the results for trade variables (discussed further below) show a real exchange rate depreciation in acceleration episodes, which also suggests that inflation expectations are well contained. The most striking finding here is that policies improve for accelerating countries and are better than for countries that did not experience an acceleration of growth. The World Bank's Country Policy and Institutional Assessment (CPIA), a broad measure of policy stance, shows a positive association with acceleration episodes in both decades.

There is a strong association between acceleration episodes and trade. Episodes are correlated with strong growth in the economies of a country's trade partners, export growth, and a more competitive real exchange rate. Exports were also facilitated by real effective exchange rate (REER) depreciations, a result that is nearly as strong as when countries in the CFA franc zone are excluded, pointing to the importance of careful management of competitiveness regardless of the exchange rate regime.

Measures of political and economic liberalization have a robust correlation with accelerations; some plausibly function as measures of reforms that trigger growth, such as trade liberalization and leadership transitions. The Sachs-Warner economic liberalization index displays a small but significant association with accelerations in both decades.²⁰ Broader indices of democracy are likely to capture the enabling environment. The composite measure of the autocracy-democracy mix (polity) captures an association between alignment toward democratic institutions and accelerations.²¹ Consistent with recent research, the 1990s evidence also indicates an expansionary role for a transition to new leadership after the departure of a long-time incumbent.

Accelerations coincide with increases in investment and productivity improvements; both higher investment and TFP growth seem to be required for an acceleration to occur. The results support, in particular, an investment-productivity nexus operating for the more recent accelerations. The most important finding here is the role of TFP growth, which is statistically significant for both decades and of considerable economic magnitude for the 1990s.

The growth of the net present value (NPV) of debt falls significantly for 1990s accelerations, pointing to the important role of debt concessionality in supporting surges in growth in the region. Whereas accelerating countries in the 1980s had increased debt-service ratios, the 1990s episodes saw reduced debt-service ratios, as well as reduced growth in the NPV of debt levels. Although countries that experienced growth accelerations also experienced a general rise in the NPV of debt-to-export ratios in the 1980s, they avoided that problem in the 1990s. Concessionality is important for these results, as the face value of debt-to-GDP ratios increases for accelerating countries. It is plausible that relaxed claims on current fiscal revenues through debt relief and greater debt concessionality have facilitated the investment increases associated with growth accelerations.

When the focus is further narrowed to accelerations sustained over 10 years, the key correlates are robust trade and investment, lower debt burdens, and more democratic institutions. Half of the accelerations analyzed above can be considered sustained over the medium term, because per capita annual growth rates over five years following an acceleration episode were also above 2 percent (Table 1). Analysis of the 5- to 10-year growth rates reveals some disappointments, such as Kenya and Zimbabwe in the 1990s and Côte d'Ivoire more recently, but also accelerations that were sustained over the medium term in Uganda, Burkina Faso, and Ghana, among others. The methodology looks for statistically significant differences in averages for these sustained episodes compared with unsustained accelerations (Appendix Table A9). The key finding is a strengthened emphasis on favorable trade and debt alignment along with political institutions and investment as correlates of

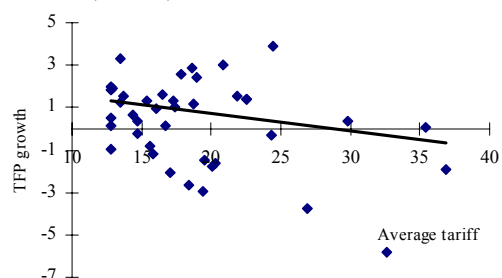
²⁰ The economic liberalization variable is the update of the original Sachs-Warner trade liberalization dating by Wacziarg and Welch (2003).

²¹ This measure is taken from the Polity IV database at <http://www.cidcm.umd.edu/inscr/polity/>. It ranges between -10 and 10, with the bounds corresponding to autocracy and democracy.

sustained growth. The analysis also shows that sustained accelerations are associated with increases in aid. In addition, aid combined with a good policy and institutional environment is shown to be a strongly significant correlate of the sustained accelerations.

The strong association between accelerations and trade is consistent with literature suggesting that a lack of openness to trade has substantially reduced Africa's growth. Cross-country regressions indicate that Africa's greater closure to international trade than the average developing country has cost the region 0.4–0.7 percentage points a year in growth. Indeed, being less open is more costly to Africa than to other developing countries. These findings are not surprising given the large body of empirical literature that shows that open economies grow faster than closed ones. While these econometric findings should be treated with caution as the debate on the interpretation of such results continues to evolve, research based on other methodologies also supports the view that trade openness promotes growth in Africa. In general, African countries with lower tariffs tend to have higher TFP growth (Figure 6).

Figure 6. Tariffs and TFP Growth in Sub-Saharan Africa, 1997-2003 (Percent)



Source: IMF staff estimates.

B. What Is Different About Acceleration Episodes?

The empirical model estimates the probability of being in an episode, or the probability of an episode beginning in a given year, in a multivariate context, implemented using a probit regression. Since the events of beginning an episode or being in one corresponds a discrete event with two outcomes, the dependent variable is equal to one for a year in an acceleration episode or a year when an episode begins and zero otherwise. Because the probit method estimates a linear equation within a cumulative normal density function, the regression coefficients are most easily understood when transformed to show the marginal change in the probability in response to an infinitesimal change in the explanatory variable, evaluated at the mean. This convention is followed for most of the tables below.²²

Variables consistently and positively associated with a country that is in an acceleration episode are real exchange rate depreciation, investment, total factor productivity, debt burden, and the overall quality of institutions and policy as measured by the International Country Risk Guide (ICRG) index. Results are presented separately for accelerations from the 1980s and 1990s, along with the combined sample for both decades and the corresponding set that would be obtained by the HPR cutoff (a jump of 2 percent growth to a

²² The reported coefficients are the output of the *dprobit* command in Stata 8. For two methods, these transformed estimates are not available: random effects and instrumental variables.

rate of at least 3.5 percent) (Table 3).²³ The most robust correlates are those that emerge as significant in the support a strong association between trade-related factors and acceleration episodes combined regression or in both decades separately—providing the list of five variables above.²⁴

Table 3. Probit Marginal Estimates for Probability of a Country Being in an Acceleration in a Year, 1980-2004

	1980s		1990s		All Accelerations		All with 3.5 percent growth	
	Marginal coefficient	p-value	Marginal coefficient	p-value	Marginal coefficient	p-value	Marginal coefficient	p-value
Macroeconomic								
Inflation	0.002	0.20	0.001	0.67	0.001	0.72	0.001	0.34
Deficit	0.006	0.12	0.007	0.23	0.007	0.14	0.01	0.01
Debt and aid								
Aid	-0.020	0.01	0.001	0.88	-0.005	0.04	-0.002	0.17
Debt service	-0.001	0.65	0.001	0.65	0.001	0.47	0.001	0.73
Debt net present value burden	0.030	0.01	0.013	0.12	0.020	0.01	0.02	0.01
Trade								
Terms of trade	0.002	0.10	0.003	0.12	0.002	0.10		
Real exchange rate	-0.002	0.01	-0.003	0.05	-0.003	0.01	-0.001	0.1
Partner growth	0.033	0.05					0.004	0.69
Export growth	0.003	0.09	-0.001	0.33				
Institutions								
Country risk	0.040	0.17	0.090	0.03	0.060	0.05	0.063	0.01
Sachs-Warner	0.250	0.31	0.130	0.40	0.080	0.31	0.015	0.02
Geographic								
Coastal	-0.040	0.47	0.080	0.26	0.020	0.77	-0.04	0.28
Resource rich	-0.180	0.01	0.110	0.20	-0.020	0.77	-0.03	0.41
Capital and productivity								
Investment	0.011	0.01	-0.005	0.26	0.005	0.09	0.001	0.8
Total factor productivity	0.47	0.25	1.82	0.01	1.49	0.01	0.66	0.03
Summary statistics and goodness of fit:								
p-value for chi-squared test		0.01		0.01		0.01		0.01
Pseudo R-squared		0.29		0.11		0.1		0.22
Percent of acceleration years predicted		79		54		58		59
Percent of predicted acceleration years incorrect		52		61		62		68

Source: IMF staff calculations.

Notes: The indicated coefficient refers to the probability of an infinitesimal change in the independent variable x , evaluated at the mean value of x . The p -value is the analog of the usual regression test for the probit coefficient being zero. The cutoff probability for the goodness of fit calculations is 0.25. Country risk refers to the index from the International Country Risk Guide (ICRG). Results with a smaller set of accelerations are shown in the rightmost column. These require 3.5 percent growth, as in Hausmann and others (2004).

Although a trade interpretation of acceleration episodes is supported by all samples, the 1980s sample features particularly strong evidence that trade channels during an episode are active. It is notable that growth of terms of trade, exports, and trade partners, which might incline to diminish each other's explanatory power because of collinearity, are all significantly positive in the regression for this decade. Using a general-to-specific estimation strategy, as warranted by the presence of multiple indicators of the same channel, the most robust of the three measures of trade buoyancy is terms of trade growth, which is significant in the combined regression and has borderline significance in the 1990s regression when the

²³ In comparing the decade subsample results, one must consider both the possibility of structural change between the two decades and small-sample bias in deciding whether a coefficient difference between the two decades is meaningful.

²⁴ The ICRG index is a proprietary index available at <http://www.icrgonline.com>. It is an average of component indicators that assess the quality of political and economic institutions and policies.

other measures of the role of trade are excluded. Finally, regardless of sample and specification, REER depreciation is always significantly correlated with acceleration episodes.

The regressions show a very strong association between institutional quality and policy stance and acceleration episodes. The significant associations between episodes and the ICRG index across all samples and specifications are a multivariate counterpart to the REO finding of a linkage between episodes and good rankings on the World Bank's CPIA. As a residual variable picking up unmeasured improvements in the productive climate, TFP growth may also be capturing the institutional improvements that accompany accelerations, explaining the positive link found for this variable. One divergence between the results reported here and in Section II.A is that the ICRG is the empirically dominant measure of country institutions and policy in the multivariate context, whereas the CPIA had performed better in the bivariate analysis.

Checks for robustness using different estimation techniques confirm the importance of real depreciation, external conditions, TFP growth, and debt as correlates of accelerations. The final two columns in Table 3 show the correlates of episodes determined by the original HPR cutoffs. Debt burden, real depreciation, and institutional quality remain significant and positive, and the economic liberalization index and budget balance are added to that list. Conversely, the coefficient on aid, which was negative for the larger set of accelerations, is now insignificantly different from zero. Appendix Table A10 reports the results from the use of alternative estimation methods (for parsimony, results are shown only for the full-period sample). A random effects probit is estimated, whereby the error term is allowed to have a country effect drawn from a distribution. The most noteworthy change from the earlier regressions is the loss in significance of the institutional quality variable (ICRG) and the emergence of significant coefficients on the dummies for coastal or resource-rich countries. The likely explanation is that the random effects absorb much of the explanatory cross-sectional country variation in the ICRG, leaving a role for the subregion dummies. This is consistent with the instrumental variable (IV) estimates,²⁵ whereby the ICRG variable is instrumented by historical settler mortality (which has only cross-sectional variation) and returns to its typical strong level of significance.²⁶ The IV regression also attaches significance to the economic liberalization measure while removing significance from aid.

Despite the reasonable significance levels associated with certain variables, the empirical model should also be assessed in terms of its ability to predict acceleration episodes in the sample. The standard goodness-of-fit tests for probit models can be augmented by examination of how well the estimated model predicts positive outcomes. Since the

²⁵ The IV method is implemented using the *probitiv* routine for Stata 8 made available by the World Bank's Poverty Research Group.

²⁶ Acemoglu, Johnson, and Robinson (2001) have argued that the quality of contemporary institutions in low-income countries was largely determined by the objectives of the colonizing powers, which, in turn, were related to the viability of settler communities. When measured by settler mortality, this provides the basis for the use of this variable in estimation. However, Sachs (2003) has argued that the empirical power of the instrument derives from its correlation with contemporary health conditions.

dependent variable is binary and the estimated probabilities range continuously between zero and one, a threshold must be chosen to convert an estimated probability into a prediction. A conventional threshold is 50 percent (that is, estimated probabilities of 0.5 or greater are taken to predict that the dependent variable equals one). However, when the overall frequency of the event is less than 50 percent, researchers have suggested that this cutoff is not appropriate and recommend adjusting it toward the observed frequency in the sample or optimizing a loss function. The model can then be evaluated in terms of two types of prediction: the proportion of actual positive outcomes that were correctly predicted and the proportion of predicted positive outcomes that were incorrect (“false positives”).

When an estimated probability of 0.25 or greater is taken as predicting an acceleration, the model correctly predicts about half of episode years, but also incorrectly identifies a sizable number of nonepisode years as accelerations (Table 3). The model classifies at least half of episode years correctly. But the model tends to make a sizable proportion of incorrect predictions that an episode is occurring; for instance, in the regression for all accelerations (in the third column), 62 percent of all predicted positive outcomes are incorrect. The performance of the random effects and instrumental variables methods is similar to that of the benchmark estimates (Appendix Table A10). The instrumental variable model does somewhat better in matching observed positive outcomes, but both models fare poorly in terms of false positives.

C. What Triggers An Acceleration?

An empirical model that can predict the timing of accelerations is more challenging, given that determining when an acceleration began is imprecise, and the more difficult objective of linking a discontinuous event like an acceleration to big changes in other variables occurring around the same time. To deal with uncertainty about timing, we follow HPR in labeling each episode as beginning in the originally determined year from Table 1 plus the two adjacent years. In addition, the dating of policy transitions includes three leading-in years (in the case of economic liberalization) or three lagging years (in the case of political transitions) to increase the chance that a transitional event overlaps with the beginning of an episode. Finally, to isolate large triggering events, terms of trade growth is transformed into a dummy variable equal to one whenever the three-year change is in the upper 75 percent of the sample.

The analysis finds that economic liberalization, as measured by the Sachs-Warner index, plays a significant role in explaining the timing of accelerations (Appendix Table A11). The variable is a significant factor in the timing of 1990s accelerations and in the combined sample. This is the major difference between our results and those of HPR, who did not find a significant role for liberalization in their timing regressions.

Political transitions are also a significant determinant of acceleration timing. Using the polity indicator from the Polity IV database (which ranges from -10 for autocracy to +10 for democracy) identifies a regime change by a change of 3 or greater in the indicator. Regime changes can be in the direction of increased autocracy (negative change of 3 or greater) or democracy (positive change of 3 or greater). A second measure of political transitions is

provided by the leader tenure variable from Olken and Jones (2004), but it does not emerge as significant in the probit framework.²⁷

Similar to HPR's findings with a global sample, when regime changes are separated into movements toward democracy and those toward autocracy, the latter are a more robust determinant of acceleration timing than the former. Researchers have hesitated to take this implication too literally, suggesting that it may be a proxy for improved state capacity or restoration of control following a period of disorder or conversely, weakened state capacity following a shift to more participatory government. Among the acceleration episodes matched to the negative change in the polity score are Angola in 1993, Ethiopia in 1992, Chad in 1984, and Zambia in 1999. Nonetheless, when a more direct measure of recent civil conflict was included in the same regression, it was not significant.²⁸

Theory suggests multiple channels linking political transitions to growth and generally implies that broad-based governments are most likely to supply the public good prerequisites for sustained growth. The theory is reinforced by consideration of the region's relatively high number of resource-rich economies. Collier and O'Connell (2005), whose discussion is highly relevant, describe a complicated interaction of resource rents, political structure, and ethnic diversity. When an autocracy in a resource-rich economy is identified with a single ethnic group in an ethnically diverse country, the prioritization of transfers over growth becomes a dominant influence on economic outcomes. But democracy can also have counterproductive effects on growth if rents are dissipated in by individuals seeking votes from groups when checks and balances are weak. Collier and O'Connell confirm an association between autocracy and weak, uneven growth in resource-rich countries in the region. The seemingly contradictory finding here of a link between moves toward autocracy and the timing of accelerations is not robust to in the refinement of the criteria for an episode or in the consideration of sustained accelerations, as discussed below.

Tightening the criteria for an acceleration strengthens the link of timing to economic variables and weakens the link to the autocracy indicator. When the probit timing model is estimated for the sample that identifies an acceleration using the tighter HPR cutoffs, coefficients are significant for the terms of trade variable and for the positive political regime change variable but not for its negative counterpart. Because the HPR cutoff is a tighter filter of high growth experiences, the results suggest that, whatever the positive growth effects of autocratic transitions, they arise for modest accelerations only. In results not reported, we find no econometric gain to interacting the polity changes with ethnic fractionalization. In a probit model with limited degrees of freedom, it is difficult, however, to fully explore the

²⁷ Their variable is equal to zero except in years of the nonviolent death of a country's leader, in which case it equals his number of years in office. This variable is designed to capture exogenous political transitions, with length of term in office acting as a proxy for the scope for policy changes under the new leader. Because the variable is quite sparse, its lack of significance in a probit regression does not mean that it is not economically important. Probit regressions require variation across outcomes, which can be lacking in variables measuring rare events.

²⁸ This measure captures recent civil conflict and is taken from the World Bank's Peacebuilding data project available at <http://www.worldbank.org/research/conflict/papers/peacebuilding>.

Collier and O'Connell channels relating autocratic political structures to rent transfers in ethnically diverse and resource-rich economies.

The timing model's in-sample predictive power is poorer than that of the model for being in an acceleration; the rate of incorrect predictions of the start of an acceleration is particularly high. The overall frequency of acceleration initiations is low, so a 15 percent cutoff probability was used. At best, the model was able to match about one-third of positive outcomes, but this outcome is associated with this is a rate of incorrect predictions of positive outcomes of up to 80 percent (Appendix Table A11). This is consistent with HPR's message: "A lot of takeoffs take place when [] conditions appear not to be particularly favorable... And growth takeoffs typically fail to materialize when the conditions are indeed favorable." Indeed, this conclusion is reinforced when the episodes are based on HPR's stricter cutoff. Now, just one fifth of episode starts are correctly called, while most predicted starts are incorrect.

D. What Sustains An Acceleration?

Separating accelerations that were sustained from those that were not reinforces the emphasis on the role of trade, while also pointing to explanatory roles for location and conflict recovery. First, a model that explains the probability of a country's being in a sustained acceleration episode is estimated (Appendix Table A12) using a specification similar to that used earlier for being in an acceleration episode. The model includes only acceleration episodes and compares values of the variables (during the five-year initial acceleration episode) for sustained versus unsustained episodes. Noteworthy here is the continued role of real depreciations but also significant positive coefficients on dummies for coastal and recent civil conflict countries. This result is understandable given that Mauritius, Mozambique, Seychelles, and Uganda are included in the set of countries that experienced sustained accelerations. Goodness of fit for this model, assessed at a 50 percent probability threshold, is a little better than for the corresponding model from Table 3. However, the model here is for sustained accelerations within the set of all accelerations, so the underlying sample is quite different.

Sustained acceleration occurrence is now negatively correlated with debt burdens, pointing to debt as a constraining factor on growth. Two measures of debt—the ratios of net present value and of debt service to exports—are negatively associated with sustained episodes. This finding has two complementary implications: that debt relief has the potential to spur growth, and growing economies need to avoid accumulating excessive debt. The finding of a negative association between debt and accelerations survives the narrowing of the set of accelerations to those determined by the HPR cutoff, with aid and investment (both positive) being the only other significant variables. This result for debt is linked to a finding from the bivariate correlations in the *REO* that 1990s accelerations and sustained accelerations are negatively correlated with debt burdens.

Comparing explanations for the timing of sustained accelerations with that of unsustained accelerations directs attention toward economic variables and away from political transitions (Appendix Table A13). From our benchmark sample of accelerations, the economic liberalization variable is significant, as in the earlier timing regressions (Appendix Table A11), but so also are democratic transitions and the recent conflict

dummy. This finding marks an alignment of our results with HPR, who find that economic liberalization and moves toward democracy lead to sustained accelerations, but that big terms of trade shocks do not. When sustained accelerations are defined using the tighter HPR cutoffs, of those variables in the original set, only the democratic transition indicator is significant.

E. Summary

Consistent themes from this section's more detailed analysis and from the *REO* are the key roles of trade, investment, productivity, and policy and institutional soundness in supporting growth accelerations. Not unexpectedly, the significant variables within these broad categories change somewhat when the analysis shifts from the bivariate to the multivariate context. For example, the probit regressions tend to find the ICRG index rather than the CPIA index to be the stronger correlate of accelerations among the institutional quality variables. In addition, although real depreciation is a robust correlate of accelerations across all specifications, the effect of trade buoyancy is captured variously by trade partner growth, export growth, and the terms of trade.

There are two important cases where findings from the *REO* reemerge in a different form in the multivariate analysis. First, although the *REO* found a strong positive link between the polity indicator and acceleration episodes in bivariate analysis, the probit regressions for being in an episode did not reproduce this finding. Recall, however, that the regressions did find a strong role for the ICRG index, which includes indicators of political freedom that overlap with those measured by the polity indicator.

Second, the *REO* found that debt rose in the 1980s growth acceleration episodes and fell in the 1990s episodes. In the multivariate analysis, debt tends to rise in episodes from both decades, but falling debt is found to be a characteristic of sustained accelerations. This is an important category because, although a relatively large number of countries in the region have been able to generate a single growth acceleration, only sustained growth will deliver significant progress towards the MDGs.

As others have found, the most difficult challenge is to find what can predict the onset of an acceleration. In other words, the search for factors that change around the same time as the initiation of an episode is a much sharper filter than the search for factors that differ between episodes and nonepisodes. The data support a role for economic liberalization and political changes in triggering accelerations. However, the timing of accelerations is very poorly predicted, indicating that the models fall short of providing guidance on either necessary or sufficient conditions for an acceleration to occur.

The findings regarding acceleration triggers vary with the type of episode considered. For the benchmark set as used in the *REO*, initiation of accelerations is linked to economic liberalization and big changes in the polity indicator, with a move toward autocracy having a strong role in the latter effect. But when the criteria are refined—limited either to sustained episodes or to those with a higher growth rate—only democratic transitions are significant.

The most encouraging finding for policymakers is the link between the quality of policies across a range of dimensions and the propensity for acceleration. The empirical analysis uses

indicators of macroeconomic stability, institutional quality, trade openness and productivity and demonstrates their link to the occurrence of an episode. On the other hand, neither resource availability nor geography was consistently associated with episodes, suggesting that an acceleration is feasible for most countries in the region. Finally, the finding that sustained accelerations are associated with lower debt and higher investment along with trade indicates that Africa's development partners need to continue to help promote growth in the region.

Box 3. Risks to Sustainability of Growth Accelerations: HIV/AIDS and Poverty

The HIV/AIDS epidemic is jeopardizing the sustainability of growth in several SSA countries. Although some countries have undertaken bold steps to slow the epidemic, and recent large increases in donor funds for prevention and treatment are encouraging, the HIV/AIDS epidemic is taking a serious toll on societies and economies in the region. Studies identify several channels through which the disease affects economic growth. In addition to reducing the labor supply, which translates into lower output, increased mortality and morbidity lower private and public sector productivity and lower the efficiency of labor by eroding human capital; at the same time, increased health expenditures tend to crowd out savings and reduce investment. For the worst-affected countries (those with HIV prevalence rates in over 20 percent in the working-age population), studies have projected that that the epidemic could reduce growth by 1 to 1.5 percentage points.¹ These estimates omit an important concern of the business communities, namely that an uncertain and deteriorating outlook could deter domestic and foreign investment. In addition, in the longer term, HIV/AIDS could discourage individuals and companies from investing in human capital, given significantly lower expected returns. It is these risks to the outlook for investment and productivity (important for growth accelerations) that raise concerns about the sustainability of growth in some countries.

Growth will not be sustainable unless it is shared by broad segments of the population. However, poverty outcomes in countries experiencing sustained accelerations have been varied. Given the infrequency of household surveys and the lack of data on the share of the population living below national poverty lines in the 1980s, it is difficult to trace the evolution of poverty rates in many SSA countries. For the seven countries that experienced sustained accelerations, and for which some poverty data are available, poverty rates declined significantly during the 1990s in Ghana, Uganda, and (in the early 1990s) Seychelles.² Burkina Faso and Benin report increases in poverty rates of less than 1 percent. In contrast, poverty rates increased significantly during the 1990s in Cape Verde and Lesotho.

¹See Haacker (2004), which draws on Joint United Nations Programme on HIV/AIDS studies. Note that data limitations prevent the formal consideration of the role of HIV/AIDS in the growth acceleration analysis.

²The percentage of households living below the poverty line in Seychelles fell to 19 percent from 30 percent between 1984 and 1992 (World Bank, 1994). This is a slightly different measure than that considered for other countries, that is, percentage of the population living below the poverty line. Inferences are based on poverty data from the World Bank's *World Development Indicators* and on country PRSP documents.

IV. POLICIES, INSTITUTIONS, AND GROWTH IN SSA

Some additional examination is warranted of selected policies that the growth acceleration analysis could not probe deeply. Although many countries' fiscal policies have improved, they still face major challenges in maintaining low deficits, reforming public expenditure

management to improve the productivity and efficiency of spending, and designing institutions that reduce the procyclicality of fiscal policy, particularly if they are resource-intensive. Financial sector development has been identified as an important correlate of growth accelerations in the literature, but less is known about the link between financial development and growth in SSA. The scope of the discussion below is limited and selective: it explores the consistency of SSA data with some important predictions from the literature directly linking fiscal policy or financial development and growth. These areas, as well as institutions—which the growth acceleration analysis highlighted and recent literature suggests are fundamental for growth—are discussed.²⁹ The coverage of policies is also selective: some of the most critical reforms now needed to improve SSA growth prospects are microeconomic or related to governance—that is, improving the quality of public services, particularly in health and education; improving the private sector business climate; and expanding and upgrading the quality of infrastructure.

A. Fiscal Policy³⁰

The literature suggests several propositions about the impact of fiscal policy on growth in low-income countries. First, recent papers have found that the channels through which fiscal policy affects growth in low-income countries are different from those in industrial countries, giving rise to a nonlinear effect of deficits on growth.³¹ One paper found a threshold of 2.5 percent of GDP (deficit including grants) at which further fiscal consolidation does not benefit growth.³² This threshold should be considered more of a range, as the relationships between deficits and growth will vary according to country specifics. Second, in general, fiscal consolidations that reduce reliance on domestic financing enhance growth.³³ Third, the composition of fiscal spending affects growth. A higher share of spending on education and health benefits growth, but with a lag. However, this positive effect is reduced if governance is poor or macroeconomic policies are unsound.³⁴

Recent data support the hypothesis of a threshold in the growth-deficit link in SSA. Although causality runs in both directions, a simple way to highlight the deficit-growth channel is to relate lagged changes in deficits to growth and conduct a separate analysis of the link between the direction of changes in the deficit and growth, depending on whether the country is above or below a particular deficit threshold. While clearly not definitive, the simple calculations in Appendix Table A14 support a stronger association between growth and

²⁹ Financial sector development and governance are key issues for SSA. Forthcoming issues of the African *REO* will examine them in more detail.

³⁰ This section draws on contributions prepared by Smita Wagh.

³¹ Baldacci, Hillman, and Kojo (2004).

³² Gupta and others (2004a). Adam and Bevan (2003), using a smaller sample, including 11 African countries, estimated a threshold of 1.5 percent of GDP.

³³ Gupta and others (2004b).

³⁴ Baldacci and others (2004).

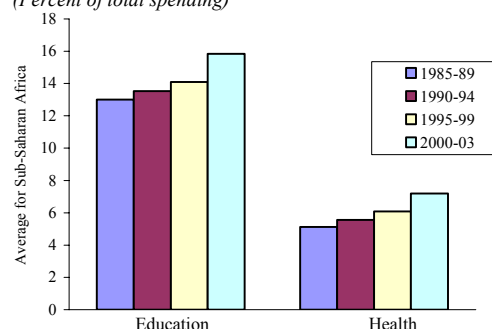
deficit reduction when the deficit is above the 2.5 percent threshold. For high-deficit countries, average growth is higher when the deficit is reduced, whereas low-deficit countries show much smaller growth improvements. The difference in growth rate changes in the two groups is statistically significant.

Since the early 1990s, SSA has seen an overall improvement in fiscal balances accompanied by a more prudent financing mix. Since the mid-1990s, growth has improved and deficits have declined. Since 2000, growth has moderated slightly, whereas deficits show further improvement, allowing countries to reduce the burden on domestic financing sources. Oil producers switched to making net repayments to both domestic and foreign sources, but the trend of relying less on domestic financing is more general. By 2004, on average, SSA governments were making net repayments to domestic sources (Appendix Table A8).

Social sector spending

Since the mid-1980s, SSA countries have increased their outlays on education and healthcare, with government spending increasing both as a ratio of GDP and as a share of total government spending (Figure 7).³⁵ The only exception to this trend is oil-producing countries, where, since the late 1980s, both measures of social sector spending have been declining. In addition, SSA data support the literature's prediction that strong governance augments the effectiveness of social sector spending.³⁶ SSA countries were ranked according to the quality of governance (World Bank CPIA data, average over the 1990s), level of social sector spending, and education and health outcomes (net enrollment in primary schools and under-5 child mortality in 2000).³⁷ All seven countries that ranked in the top third of the distribution on both governance and education spending also ranked in the top third on education outcomes. Five of the eight countries that ranked in the top third on governance and health spending also ranked in the top third on health outcomes. In contrast, top outcome rankings were relatively few for countries ranking in the top third on only one of the governance or spending indicators.

Figure 7. Government Spending on Education and Health (Percent of total spending)



Source: IMF, WEO/Economic Trends in Africa database, 2004.

³⁵ One should expect a significant time lag between increases in the scaling up of aid for social expenditures and their full effects on social indicators and growth. Baldacci and others (2004) find the highest positive effects of social expenditures in SSA, because marginal returns are high given lower levels of social outlays.

³⁶ See also Gupta, Davoodi, and Tiongson (2002) on the negative effect of corruption on social indicators.

³⁷ Qualitatively, similar findings hold using the ICRG or Kaufman, Kraay, and Zoido-Lobaton (1999) governance data.

Infrastructure spending

Declines in capital expenditures are a cause for concern. Since the mid-1980s, public investment in SSA has declined modestly, both as a ratio of GDP and as a share of total spending. These declines partially reflect poor budget execution—persistently lower than programmed capital expenditures, which tend to be cut when there are fiscal overruns occur—and may also relate to shortfalls in foreign financing.

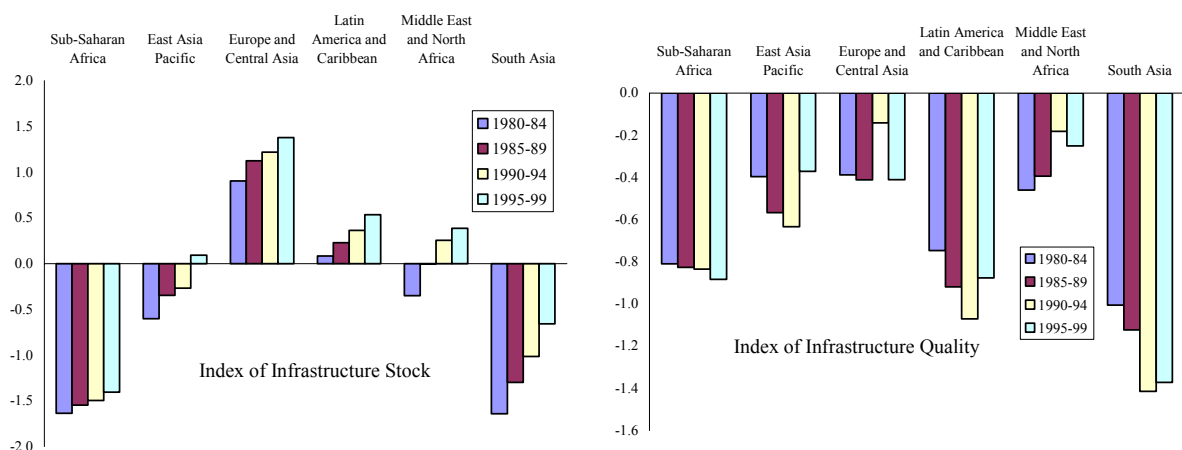
Higher allocations of public investment spending on infrastructure are likely to contribute to growth. Recently, high-profile efforts such as the UN Millennium Project (2005) have focused attention on the severe infrastructure shortage in Africa as a key obstacle to growth. However, results from studies on the impact of public investment on growth both overall and for Africa in particular, do not give clear-cut results.³⁸ Studies that have focused on infrastructure also have mixed results, but some have found a positive, significant contribution to output and growth. A recent panel study of over 100 countries by Calderon and Servén (2004) found that an infrastructure index measuring telecommunications, power, and transport had a positive effect on growth. The index comprises data on the number of main telephone lines, an economy's electricity-generating capacity, and the length of the road network.

SSA benchmarks compared poorly with low-income countries in other developing country regions, based on the new data on infrastructure stocks and quality. In addition to infrastructure stocks, Calderon and Servén (2004) also compile an aggregate index of the quality of infrastructure services in the three subsectors. Compared with low-income countries in other regions,³⁹ SSA has the lowest value for the infrastructure stock index, and has experienced the slowed growth in the index since 1980–2000 (Figure 8). The infrastructure quality index has deteriorated slightly for SSA, and South Asia is currently the only region where infrastructure quality ranks lower than that of SSA.

³⁸ IMF (2005c) contains a summary of studies on public investment and growth.

³⁹ Country classification follows World Bank and IMF (2005).

Figure 8. Infrastructure Development in Low Income Countries



Source: Calderon and Servén (2004).

Notes: Infrastructure stock uses data on number of main telephone lines per 1000 workers, electricity generating capacity in MW per 1000 workers, and length of the road network in km. per sq. km. of land area. Infrastructure quality uses three indicators: waiting time for telephone main lines, the percentage of transmission and distribution losses in electricity production, and the share of paved roads in total roads. The indices of infrastructure stock and quality are calculated based on the weights by which the log values of the indicators enter the first principal component analysis. The negative values reflect the log values of fractions.

The expected growth benefits of reaching the level of infrastructure development of Mauritius, the regional leader, vary across SSA countries. Based on preferred estimates from Calderon and Servén (2004), payoffs are relatively low for countries like South Africa, whose current infrastructure stock is highly developed, and very large for countries like Niger, whose infrastructure is very limited (Appendix Table A16). Estimates suggest that Nigeria would experience the largest growth gain from improving its infrastructure quality to the level of the regional leader, consistent with its current poor quality of infrastructure services. But these expected large growth benefits would require infeasible growth in infrastructure stocks. For example, to reach the level of the regional leader, Ghana would need a 35-fold increase in the number of main telephone lines, a 5-fold increase in power generating capacity, and a 6-fold increase in the density of the road network. These calculations indicate that, according to this model's specification, the growth effects of more reasonable increases in infrastructure are actually very modest.⁴⁰

B. Financial Development⁴¹

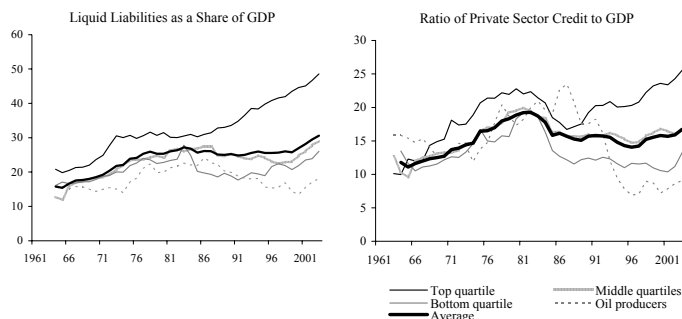
The economies in SSA with the best-developed financial sectors have experienced a higher per capita growth rate than the average, and the differential has widened since the financial liberalization of the 1990s. However, the development of financial markets, as measured by

⁴⁰ For SSA, a one-standard-deviation increase in the index of infrastructure stocks (quality) in SSA would raise the long-run growth rate by 2.7 (0.4) percentage points. But given the very wide range in the measured stocks, a one-standard-deviation increase is very large and implies increases in spending on infrastructure that are probably not feasible.

⁴¹ This section draws on contributions prepared by Brieuc Montfort.

the ratio of liquid liabilities to GDP, has been slow and uneven.⁴² Differences in growth are wider if the oil producers, which experienced high growth but remained financially underdeveloped, are excluded (Figure 9). The weak financial development-growth link in the oil producers may help explain indications from the literature of a somewhat weaker relation between growth and financial development in Africa.⁴³ Excluding oil producers, the economies that grew fastest over 1960-2003 also are those that are the most financially developed (Figure 9).

Figure 9. Financial Development of Countries Classified by Growth (Percent)



Source: World Economic Outlook database, 2004.

Note: The six oil-producing countries are classified separately. The remaining countries are classified by quartiles, according to real growth over 1960-2003.

For financial development to stimulate growth, the policy environment must be favorable. In the early 1990s, the persistence of fiscal imbalances, which tend to crowd out credit flows to the

private sector, may have weakened the effects of financial liberalization for some African countries.⁴⁴ Substantial government ownership and interference in the banking sector may reduce the quality of banks' decisions, lowering investment efficiency and growth. A crude segmentation of African countries into four categories depending on financial sector development and growth suggests that the growth-promoting effects of financial sector development may materialize only in conditions of macroeconomic stability (Appendix Table A17). Among the countries with relatively strong financial development indicators, those that grew faster achieved greater macroeconomic stability; that is, they had much lower budget deficits, including grants and lower inflation. This supportive effect of macroeconomic stability for the financial development-growth nexus was even stronger during 1997-2003.

C. Institutions⁴⁵

Recent evidence in the literature suggests that institutions are the most important determinant of long-run growth. However, improving basic institutions—the laws, rules, and other

⁴² Since the 1990s, banking reforms have evolved: countries have eliminated harmful government interventions; addressed weak or distressed banks through restructuring, privatization, and strengthened regulation; reduced crowding out through fiscal adjustments; and adapted the regulatory environment to allow broader access to credit. Further reform in the last area remains a priority: addressing the key legal, regulatory, and institutional bottlenecks to access to banking services and credit, particularly for underserved groups.

⁴³ In addition, Kpodar (2005) finds that the contribution of financial development to growth is weaker in SSA than for other developing countries. The paper shows that this weaker relationship is due to SSA's high level of ethnolinguistic fractionalization, large number of countries experiencing protracted banking crises, strongly concentrated banking sectors (suggesting limited competition), and heavy government intervention in the banking system.

⁴⁴ Reinhart and Tokatlidis (2003).

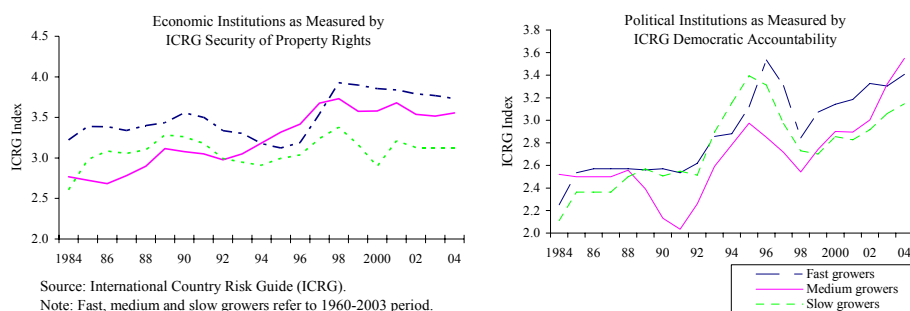
⁴⁵ This section draws on contributions prepared by Elena Duggar.

practices that govern property rights; the freedom to do business; and the sanctity of contracts—can take a long time. In fact, as causation operates in both directions, spurring large improvements in basic institutions may be difficult without sustained growth.⁴⁶ Policies also seem to play a role in fostering institutional development—for example, strengthening competition through trade openness, expanding the public’s access to information, increasing transparency, providing assistance in building institutional capacity, and creating external incentives, such as the peer pressure mechanisms to be used in the New Partnership for Africa’s Development (NEPAD).⁴⁷

The impact of institutional quality on growth is economically significant. In general, poor policies and institutions have explained a large share of the slow growth in Africa.⁴⁸ Studies have found that the annual growth in Sub-Saharan Africa would increase by 1.7 percent if countries in the region adopted the world average quality of institutions.⁴⁹ Moreover, extensive corruption within the political system and inefficient government bureaucracies are found to increase transaction costs and constrain the efficiency of resource allocation.⁵⁰ Tax revenue to GDP ratio in sub-Saharan Africa would increase by 1.5 percent if corruption improved by one unit (for example, from 3 in Kenya, to 4 in Madagascar).⁵¹

The overall quality of both economic and political institutions in SSA has been improving. However, for SSA as a whole, while the improvement in political institutions

Figure 10. The Evolution of Economic and Political Institutions in Sub-Saharan Africa, 1984-2004



continued throughout the 1990s, the strengthening of economic institutions plateaued in the late 1990s.⁵² Fast-growing countries generally had better-quality institutions than slow-growing countries. Also, fast- and medium-growing countries have had more improvement in institutional quality than slow-growing countries (Figure 10). These observations have been

⁴⁶ It is interesting to note, however, that of the very few countries that seem to have improved their institutions significantly before achieving high growth, two of these—Botswana and Mauritius—are in SSA.

⁴⁷ IMF (2003).

⁴⁸ Hernandez-Cata (2000); Collier, and Gunning, (1999); Easterly and Levine (1997); Sachs, and Warner (1997), Saviddes (1995).

⁴⁹ IMF (2003).

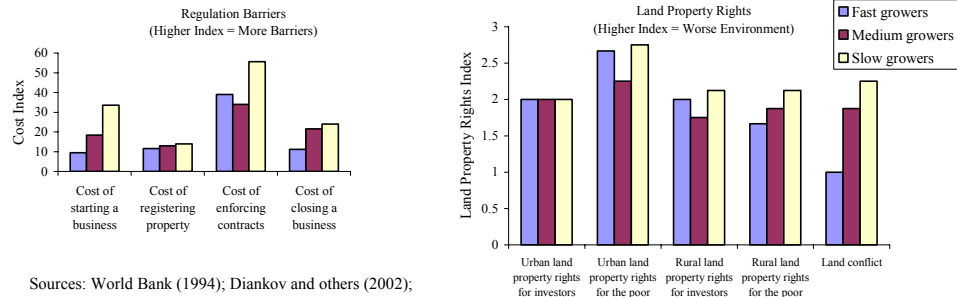
⁵⁰ Keefer (2004), Leite and Weidmann (1999); Poirson (1998).

⁵¹ Ghura (1998).

⁵² Johnson and Subramanian (2005).

confirmed by recent objective measures of countries' economic institutions. In fast-growing countries, starting a

Figure 11. Objective Measures of Economic Institutions in Sub-Saharan Africa, 2004



Sources: World Bank (1994); Diankov and others (2002); Diankov and others (2003); World Bank database 2004.

business, registering property, enforcing contracts, and closing a business are less costly; urban and rural land property rights for investors and for the poor are more secure, and there are fewer land-related conflicts (Figure 11).⁵³

While the quality of economic institutions is correlated with the quality of political institutions, the linkage between changes in political and economic institutions in SSA is weak. Recent evidence shows that the quality of political institutions and the degree of political stability influence economic institutions, which, in turn, affect economic performance.⁵⁴ In levels, measures of the economic and political institutions in SSA tend to be strongly correlated; for example, there is a 30–50 percent difference in the index of security of property rights between countries in SSA that have political freedom and those that do not, as measured by Freedom House. In the long run (1980–2000), however, Johnson and Subramanian (2005) show limited correlation between changes in political institutions (measured by the polity indicator) and changes in economic institutions (from ICRG).⁵⁵ We confirm that this weak correlation is evident using a range of alternative indicators of political and economic institutions. Over time, the country level correlations rise from 1980 up to the early 1990s and then fall.

This weak correlation between changes in political institutions and economic institutions is not surprising given trends in these indicators beginning in the 1990s. Significant improvement has been registered in political indicators such as the Freedom House indexes on political rights and civil liberties, the policy democracy index, and indices of the competitiveness of legislative and executive elections.⁵⁶ As noted, however, region-wide, the ICRG indicator of economic institutions has stagnated since the second half of the 1990s.

⁵³ Zimbabwe is a prime example of a country where, in addition to political and economic policy problems, insecure land tenure and land-related conflicts have contributed to a severe downward spiral of growth.

⁵⁴ Acemoglu, Johnson, and Robinson (2001); Acemoglu and Robinson (2005); Aron (2000).

⁵⁵ Bates (2005) also suggests that democratization in SSA in the 1990s may have made countries more prone to destabilizing political business cycles, because of, in part, the limited availability of information that citizens need in order to hold governments accountable.

⁵⁶ From the Database on Political Institutions (see Beck et al, 2001).

The sizable number of resource-rich economies in SSA is also a factor related to the weak correlation between changes in political and economic institutions. Resource-rich countries have seen some improvement in political institutions, but this increasing democratization has not been associated with improvements in economic governance. This is consistent with a recent paper's evidence on the negative effects of democratization on growth in resource-rich countries.⁵⁷ The authors also found that these adverse effects in resource-rich countries were reversed in political systems with intensified checks and balances, particularly freedom of the press.

The quality of economic institutions is also correlated with other structural characteristics of SSA countries. On average, institutions in SSA tend to be strongest in coastal countries, followed by resource-rich countries, and then landlocked countries.⁵⁸ Institutions also tend to be weaker in oil-producing countries, in members of the CFA franc zone, and in conflict countries. Finally, institutional improvement is stronger in countries with on-track IMF programs than it is in both nonprogram countries and countries with off-track programs. While causality is difficult to determine, a recent paper finds that strong institutions improve IMF program implementation.⁵⁹

V. PRO-POOR GROWTH

Policymakers are justifiably concerned about the relationship between economic growth and the distribution of income and, in particular, about the impact of growth on the incomes of individuals living below the poverty line. The conventional wisdom of recent years has been that growth leaves the relative income distribution unaffected, while policies aiming to redistribute income risk affect the growth rate adversely (Tanzi and Chu, 1998). The implication is that policymakers should concentrate on growth-promoting policies because the incomes of the poor will rise with growth, thereby contributing to poverty reduction. At the same time, the extent of poverty reduction in a country would depend on the initial income distribution, making the measurement of inequality an important indicator for evaluating the country's prospects of reaching the income poverty MDG. Recent evidence of different rates of poverty reduction and rising inequality in SSA points to the continued relevance of the growth-poverty-inequality nexus (Iradian, 2005).

Increasing inequality is of particular concern when it undercuts the ability of growth to benefit society's least well-off members. A set of recent studies has therefore sought to draw

⁵⁷ Collier and Hoeffler (2005). The empirical work tests propositions of a simple model whereby politicians find it more effective to compete by providing private patronage than by providing public goods..

⁵⁸ Different types of economic institutions might be particularly important for growth in different types of economies. For example, low corruption levels are critical for resource-intensive countries. Institutions that lower the cost of doing business, particularly for exporting manufacturers, are important for coastal countries, and weak rural property rights may be the key constraint for landlocked countries. These issues warrant further investigation.

⁵⁹ Using data from a broad sample of IMF-supported programs, Nsouli, Atoian, and Mourmouras (2004) find that strong institutions lead to better program implementation. The paper shows that program implementation also exerts an independent effect on macroeconomic outcomes, but not on growth.

lessons on the type of growth process that is most effective at raising the incomes of the poor: “pro-poor,” or “shared” growth. Focusing on the macroeconomic issues, this section reports the key messages of these studies for SSA. The studies reaffirm that growth does not tend to widen inequality and that the strong impact of growth on poverty reduction far exceeds any offset from rising inequality. Nevertheless, a comparison of the drivers of growth across countries is informative about the interaction of growth with inequality and poverty. The studies highlight three important issues to be considered in assessing an economy’s ability to produce growth with significant poverty reduction. These are (1) the relative importance of the agriculture and rural sectors in growth, (2) the potentially wide-ranging impact of infrastructure investments, and (3) the management and allocation of aid inflows.

A. Meaning and Importance of Pro-Poor Growth

The notion of pro-poor growth captures the extent to which economic growth leads to increased welfare for the less well off in a society. An assessment of whether growth is pro-poor thus requires knowledge of how the distribution of income shifts during growth, and how this affects the welfare of the less well off. Studies of pro-poor growth identify the less well-off group as those who fall below the poverty line for income or consumption. If the welfare of the poor depends on the gap between their income and that of richer households, then pro-poor growth would involve more rapid income growth for the poor than the nonpoor. However, noting that global and national development targets call for reductions in the level of poverty, Ravallion (2004a) has argued that pro-poor growth is best defined as growth that reduces the poverty measure of interest. This logic leads to a focus on the change in the income of the poor, which underlies changes in income poverty measures.

In accounting terms, a change in poverty over time contains components attributable to the rate of economic growth, the response of poverty to that growth, and changes in income distribution. This decomposition of changes in headcount poverty has proved to be very informative about the reasons for variations in the rate of poverty reduction across countries. A method proposed by Datt and Ravallion (1992) allows a decomposition of country-level poverty changes into a growth component and an inequality component. The growth component reflects the rate of growth and poverty response to it (the elasticity of poverty with respect to growth), whereas the inequality component reflects changes in distribution. Kraay (2005a, b) presents a variance decomposition method that further attributes the variation in the Datt-Ravallion growth component to variation in the growth rate and the elasticity.⁶⁰ These two components can then be combined with the inequality component to produce three-part decompositions of changes in poverty.

The key finding that emerges from poverty decompositions is that the bulk of the variation across countries in the rate of poverty reduction is due to variation in overall growth. At medium to long horizons, the proportion of poverty-reduction variation explained by growth

⁶⁰ The Datt-Ravallion method is an exact decomposition of the change in a poverty indicator into growth and inequality components, except for a small residual arising from the use of discrete rather than continuous time. Kraay’s variance decomposition requires an additional minor approximation.

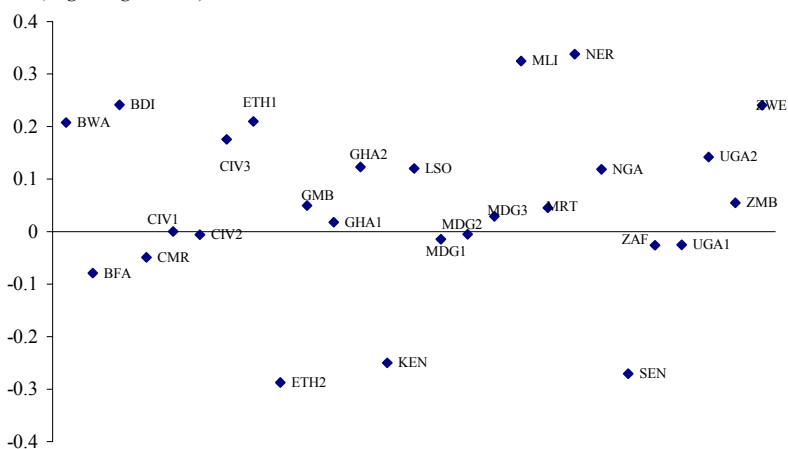
is close to 100 percent. This means that, in the long run, whether growth is pro-poor is simply a matter of the rate of overall growth. At shorter horizons, variation in inequality and poverty elasticity can matter, but, on average, the effect is small. Moreover, as emphasized by Kraay (2005a, b), the source of variation in the income distribution and elasticity components is poorly understood.

Nonetheless, the elasticity of poverty (which is presumed to be negative) is

larger in absolute value when inequality is lower and mean income is higher. The intuition, as explained in Heltberg (2002), turns on the fact that the elasticity refers to the percentage change in poverty and not the change in headcount poverty itself. Thus, when income distribution is more unequal, more households fall below any given poverty line and the percentage changes are thus smaller when the distribution shifts. Similarly, the higher is mean income above the poverty line, the fewer households there are (all other things equal) in poverty, generating bigger percentage changes in poverty from a change in mean.⁶¹

Despite the historically minor role of changes in inequality in explaining changes in poverty, SSA has seen sizable changes in inequality since 1980. This finding is especially surprising given the belief that indicators of inequality are quite stable over time. Consider the Gini coefficient, which measures the skewness in the income shares accruing to groups of equal size in a population.⁶² Using data from the World Bank's Global Poverty Monitoring database, Figure 12 shows the log change in the Gini coefficient for 27 growth-poverty spells in 20 SSA countries between 1980 and 2001.⁶³ There are cases of both large declines and increases in the Gini, with increases in the Gini predominating (several changes in the Gini

Figure 12. Changes in Inequality for Sub-Saharan Africa
(Log change in Gini)



Source: IMF staff calculations and World Bank Global Poverty Monitoring database.
Note: The data spells differ by country with some multiple spells for a single country, and span 1980-2001 overall. Countries are indicated by ISO code, plus a number where there is more than one spell for a country.

⁶¹ Strictly speaking, the link between the Gini and the poverty elasticity of growth arises as a consequence of the function that is used to approximate the income distribution. It would be more precise to focus on the mass of households *around the poverty line* as a determinant of the elasticity (Kalwij and Verschoor, 2004).

⁶² The Gini coefficient ranges between 0 and 1, with 0 indicating equality and 1 indicating that all of the economy's income accrues to the richest income group.

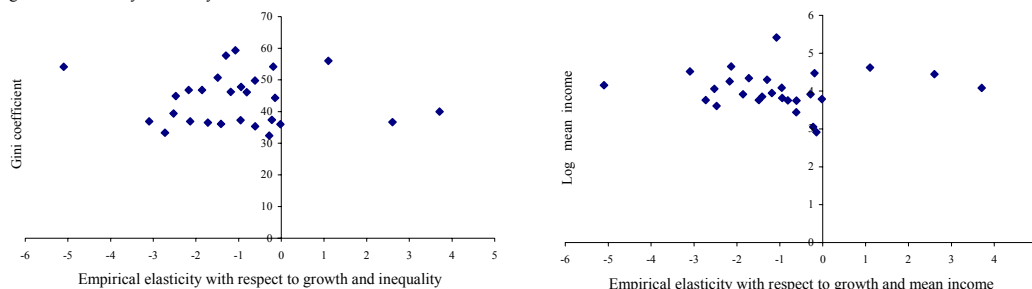
⁶³ Each spell is constructed from changes between two comparable household budget surveys for a country. Household surveys are often conducted at irregular intervals, and not all have been processed for the World Bank's Poverty Monitoring database. Thus, spells will differ in length and number across countries. See Chen and Ravallion (2004) for a description of this dollar per day headcount poverty measurement data, which are the basis for the World Bank's monitoring of target 1 of the income poverty MDG.

are near or above 20 percent). There is no obvious tendency for inequality to increase with growth, as a perusal of specific country episodes reveals. For instance, the largest increases in the Gini were experienced by Mali (1989–94) and Niger (1992–95), where mean income fell over the same period. Conversely, large declines in inequality occurred in Ethiopia (1995–2000) and Kenya (1994–97); in the former, mean income fell and, in the latter, it rose. This lack of correlation between growth and changes in inequality is demonstrated in large samples by Adams (2003) and Ravallion (2004b).

Researchers have found that SSA has a low elasticity of poverty with respect to growth by global standards, reflecting high inequality and low per capita income in the region. Besley and Burgess (2003) report a global poverty elasticity to per capita GNP growth of -0.73, with elasticities ranging from a high of -1.14 in transition countries to a low of -0.49 in SSA.⁶⁴ Iradian (2005) constructs a large sample of poverty, growth, and inequality spells from multiple sources, and in a regression of the poverty headcount on GDP growth and the Gini, finds a global elasticity to growth of -1.1 and to inequality of 1.4. For SSA, the corresponding numbers are -0.79 and 1.2.⁶⁵ Epaulard (2003) confirms that the poverty elasticity to growth varies as one would expect with respect to initial equality and mean income in a global sample.

Nevertheless, there is large country variation globally and across SSA in the size of the elasticity around the global and regional averages.

Figure 13. Elasticity of Poverty in Sub-Saharan Africa



Sources: IMF staff calculations; World Bank Global Poverty Monitoring database.

In addition, the empirical elasticities are only loosely correlated even with their proximate determinants, and more loosely with other measurable country-specific factors. Figure 13 shows a set of “gross” elasticities derived from the World Bank’s Global Poverty Monitoring data—that is, the percentage change in headcount poverty divided by percentage change in income growth for any country for which at least two household surveys are available. In the right panel of Figure 13, the elasticities are plotted against the initial Gini coefficient for the episode; in the left panel, they are plotted against initial

⁶⁴ A primary source of variation in estimated elasticities arises from the choice of growth measure. Because survey mean consumption or income tends to grow less rapidly than the corresponding national accounts measure (Deaton, 2003), the change in poverty will show a higher elasticity to growth in the survey mean than to a GDP-based measure.

⁶⁵ The combination of multiple data sources into a single sample does raise concerns about comparability, however. One would expect the elasticity of poverty with respect to inequality to be highest where inequality is highest. In Iradian’s sample, this effect is most evident for Latin America. His regression includes other variables that may absorb some of the link between inequality and poverty, also explaining why SSA’s elasticity with respect to inequality is lower than the global average.

income. Note the huge range of values for the elasticity and its lack of obvious correlation with either variable.

Active research seeks to clarify the role of policies and country conditions in explaining the evolution of poverty and inequality over time. However, relatively sparse data and multiple directions of causation linking growth, poverty, and inequality have impeded definitive findings. Kraay (2005a) finds that it is difficult to provide a satisfactory empirical model for the elasticity of poverty or changes in distribution, consistent with the mixed record in explaining income distribution patterns across countries (probably because of the presence of poorly measured country-specific determinants thereof). Such unobserved heterogeneity also introduces the risk of bias in regressions explaining income distribution. Nevertheless, the formalization of pro-poor growth has provided a new set of diagnostic tools for analyzing poverty reduction within and across countries and guidance about where to look for explanations of different rates of progress on poverty reduction.

Despite the small role of inequality in explaining the average extent of pro-poor growth, rising inequality undercuts the ability of growth to reduce poverty. Thus, an indicator of inequality like the Gini coefficient is a valuable tool for monitoring a country's poverty reduction prospects. In addition, the simple mathematics of income distribution and elasticity formulas implies that if African countries could find a painless way to reduce inequality, they would reap a double benefit: an immediate reduction in poverty and a higher elasticity of poverty to growth, meaning that any given rate of future growth would translate into more rapid poverty reduction than in the past (for example, Heltberg, 2002). As Besley and Burgess (2003) emphasize, this result is not a justification for a static redistribution of resources through taxes and transfers. Instead, it will be more important to address administrative or market imperfections that have an undue impact on the poor; property rights and access to financial services are two leading examples. Furthermore, while decompositions such as those reported here provide information on the proximate sources of variation in pro-poor growth, it is necessary to examine the drivers of growth to understand its distributional impact.

B. Channels of Pro-Poor Growth

Recent studies point to three related determinants of the effectiveness of growth in reducing poverty: generation of growth in the agriculture and rural sectors; enhancement of productive capacity, particularly in infrastructure; and management of aid inflows. The following subsections present the detailed evidence for this assertion, but the main points can be summarized here. Many studies of economic development in Africa highlight that development policy has tilted toward donor priorities in the social sectors and that, in the 1990s, it was assumed that the private sector would provide infrastructure.⁶⁶ Donor and government budgets have tended not to make basic rural infrastructure and other investments to enhance agricultural productivity high priorities. Indeed, the lack of an agricultural productivity boom in Africa such as the one South Asia experienced underscores the different growth paths taken by the two regions. Countries in SSA are further constrained by

⁶⁶ See for example Chapter 7 of Commission for Africa (2005).

a weak domestic revenue base, which makes their economies vulnerable to both aid fluctuations and donor prioritization of spending needs.⁶⁷ Thus, the legacy of a weakened agriculture sector as a result of traditional urban-biased development policies has not been fully offset.

Since pro-poor growth concerns the ability of the poor to participate in a country's growth, an assessment of whether a policy is pro-poor should focus on its impact on the productive opportunities of the poor. This thinking leads to recognition of intertemporal trade-offs in the determination of policies. For instance, many health and education policies have a delayed productivity impact because beneficiaries may not be in the labor force until years after the policies are adopted. In addition, the effectiveness of provision of social services depends on the current productive constraints that hold back other sectors of the economy. Recent studies have demonstrated powerful synergies between the attainment of the poverty and sectoral MDGs when economy-wide links are taken into account. These links center on the role of infrastructure in increasing productivity—including that of the health and education sectors. Similarly, while labor-intensive growth in the sectors where the poor are employed would be associated with poverty reduction, the incomes of the poor also depend on the productivity of these sectors.

The exploration of country variation in the link between poverty, growth, and inequality poses significant methodological challenges. The basic problem is the number of possible explanations for the link between growth and poverty relative to the infrequency of household surveys that provide data on poverty and inequality. Thus, the analytical framework needs to be refined to derive more information from the limited range of experiences. Studies have used a variety of methodologies, from country case studies, structural economic models, statistical modeling, and hybrid statistical-narrative approaches. The case-study approach was the centerpiece of the World Bank's Operationalizing Pro-Poor Growth (OPPG) research program. Structural models offer the ability to trace poverty levels to specific policy and exogenous factors, but their relevance for country experiences is questionable. Regression approaches offer the prospect of formal testable hypotheses, but will quickly exhaust available data unless very carefully specified. These considerations motivate hybrid studies.

Country experiences

The OPPG program relies mainly on case studies and hybrid approaches and has also developed a specific set of metrics for pro-poor growth. These include the Datt-Ravallion decomposition of the change in poverty into growth and inequality components and a summary statistic *rate of pro-poor growth*.⁶⁸ A closely related graphical tool, the Growth

⁶⁷ IMF (2005b) data for 2004 show that government revenue excluding grants is about 23 percent of GDP for SSA overall, but just 16 percent for the Heavily Indebted Poor Countries (HIPC) subset, and 13 percent for Burkina Faso and Uganda.

⁶⁸ Ravallion (2004a, 2004b) has argued that both intuitive appeal and theoretical elegance recommend the Watts index—the average of the growth in log income of those below the poverty line—as the measurement

(continued...)

Incidence Curve (GIC), shows the growth rate of income or consumption across the entire income distribution, with the rate of pro-poor growth corresponding to the area under the GIC in the region below the poverty line.⁶⁹ The OPPG research program contains two outputs of particular relevance for macroeconomic policymakers concerned with SSA: five country case studies from the region (Burkina Faso, Ghana, Senegal, Uganda, and Zambia,)⁷⁰ and sectoral synthesis papers. The following paragraphs concentrate on those elements of the studies that reflect their focus, not just on overall growth but on pro-poor growth itself.

Although measurement of the rate of poverty reduction in case-study countries depends on the data source, the poverty-reduction record as shown by national data is important because of its use in policy formulation and its coverage of more recent periods. The World Bank's Global Poverty Monitoring database meets the objective of measuring the MDG poverty indicator on a consistent basis across countries. But, although based on national data, the methodology and coverage of the poverty statistics differ from those of the national data. None of the World Bank data are more recent than 1998 for the case-study countries, and the data go up only to 2001 for any country in the region. National data provide a more recent picture than World Bank data, but have been open to measurement controversies.⁷¹ For completeness, Appendix Table A18 reports both World Bank and national data. The case study countries, except for Zambia, have experienced sharp falls in poverty by their national measures. The finding that poverty has declined reflects the fact that the case-study countries have all participated to some extent in the improvement in African growth performance since the mid-1990s.

Trends in inequality are mixed across the case-study countries and show no obvious correlation with overall growth. There is rising inequality in Ghana and Uganda, declining inequality in Burkina Faso and Zambia, and an uncertain picture for Senegal. Inequality in Burkina Faso has remained steady or even declined slightly in the face of a significant macroeconomic adjustment in 1994 and steady subsequent growth. Ghana displays a modest

variable for the rate of pro-poor growth. This measure achieves a type of equal weighting of all household incomes below the poverty line (adjusted for the gap between household income and the poverty line).

⁶⁹ The World Bank has disseminated software tools that calculate the GIC and the pro-poor growth rate, and such calculations are included in the OPPG country case studies.

⁷⁰ See the following case studies: Uganda – Okidi and others (2004); Ghana – McKay and Aryeetey (2004); Senegal – Azam and Dia (2004); Burkina Faso – Grimm and Gunther (2004); Zambia – Thurlow and Wobst (2004). Links to all papers can be found at <http://www.worldbank.org/propoorgrowth>.

⁷¹ For two of the countries (Burkina Faso and Uganda), the measurement issues for developments since 1999 have been severe. There is a subtle risk of selection bias in the outcomes of controversies over poverty data. These tend to arise when a country is perceived as performing well in terms of GDP growth or compliance with policy advice, but poverty does not decline. The data are then approached with an expectation that something must be missing. Since African household surveys are imperfect, credible flaws that tend to overstate poverty may well be identified. But similar flaws in poorly performing countries might go unquestioned.

increase in inequality according to its national survey.⁷² For Uganda, national and World Bank data sources both show a rise in inequality throughout the 1990s and, according to national data, into the current decade. Zambia is moving in the opposite direction, with a sharp decline in inequality sufficient to move the country away from a level of inequality more typical of Latin America at the start of the 1990s. Any definitive statement for Senegal is impeded by the lack of recent data and concern that the available surveys may not be comparable.

Countries' experiences are consistent with recent evidence that growth is the main driver of poverty reduction, but the extent to which changes in inequality also contributed to poverty reduction varies from country to country. Burkina Faso experienced the highest rate of pro-poor growth, while Uganda's progress by this measure in the 1990s was somewhat offset by its recent experience (Appendix Table A19). By this metric, Zambia is the most sluggish performer, an outcome that is consistent with macroeconomic and policy developments during the relevant period. Appendix Table A19 also shows the decomposition of the total change in headcount poverty into growth and inequality components.⁷³ Although the contribution of growth tends to exceed that of inequality, inequality effects are often very sizable. While Burkina Faso has registered a sizable drop in poverty as a result of falling inequality, Uganda has experienced the opposite, and Ghana and Zambia show very small inequality effects.

Divergences in sectoral growth performance are a leading factor in explaining cases where inequality has increased. Ghana began the 1990s with low inequality by African standards. But, since then, growth and poverty reduction have been concentrated in Accra and the mineral-rich rural forest zone, with the rural savannah and rural coastal areas lagging behind. The case study estimates an elasticity with respect to the national poverty line of just under one, whereas the World Bank data show only a miniscule change in headcount poverty, that is, the implied elasticity from those data would be even lower. The broad picture for Uganda is quite similar: a rural versus urban divide, weak growth in agriculture, commodity price vulnerability, and social sector expansion are the important factors for understanding the pattern of growth. Although the country's recovery in the 1980s and 1990s was broad-based, GICs reveal growth in incomes heavily skewed toward the top quintile in the distribution from 1997 onward, enough for the overall income growth experience since 1992 to have been characterized by faster income growth for those above the poverty line than below. In accounting terms, the increase in inequality can be traced both to increased inequality within urban areas and to the divergence between urban and rural areas. Thus, weakness in agriculture is only part of the explanation for rising inequality.⁷⁴

⁷² The increase in inequality for Ghana in the 1990s is larger when measured with World Bank data. However, longer spells of the World Bank data for Ghana also show only a small increase in inequality, because inequality seems to have fallen at the end of the 1980s before rising in the subsequent decade.

⁷³ This is the Datt-Ravallion decomposition and, hence, except for a small residual, the growth and inequality components will sum to the total change in headcount poverty over the indicated period.

⁷⁴ Kappel and others (2004) provide a very similar analysis of weakness in agriculture but also point to constraints on small and medium enterprises as explaining Uganda's slowing rate of poverty reduction.

The two countries in which inequality has fallen (Burkina Faso and Zambia) share an increased emphasis on agriculture as a source of growth that is mirrored in their adjustment of the role of urban formal sector employment in development policy. Sahn and Younger (2004) argue that the pricing reforms throughout African agriculture in the 1980s and 1990s were pro-poor because the poor tend to be net agricultural producers whereas the rents from price-management schemes accrued to better-off urban consumers. The case studies reflect this experience. In Burkina Faso, the 1994 devaluation favored traded goods sectors, with the main employment response occurring in the informal sector. These changes tended to reduce poverty and inequality, although a study by the World Bank (Bernabè and others, 2005) points out that the higher prevalence of informal sector employment may represent increased vulnerability to poverty, relative to formal sector employment.⁷⁵ In contrast to the singular role of the 1994 devaluation in Burkina Faso, policy reform in Zambia took place over a decade. Through its reforms the government has succeeded in reducing the bias toward the formal sector by progressively withdrawing subsidies to domestic industries linked to mining and by unwinding a food-pricing system that favored urban food consumers at the expense of producers. This reform program had distributional consequences, including negative ones for the previously protected sectors. Some urban households fell into poverty, but some of the initially poor households registered gains in income; thus, poverty rose but inequality fell. The recent household survey, not yet available, will be vital in ascertaining whether the steady growth recorded since 1999, based partly on a revitalized agriculture sector, has contributed to poverty reduction.

Channels of pro-poor growth

Agriculture constitutes a significant part of the traded goods sector for many SSA economies, and the level and volatility of the real exchange rate is a key determinant of this sector's performance. It is well known that overvalued real exchange rates were part of the urban bias of development policies in the 1970s and 1980s. Recently, large increases in aid to particular SSA countries as well as proposals for an overall large scaling up of aid to Africa have raised concerns about Dutch disease: constraints on export growth from real exchange rate appreciation. However, the stylized notion of an agriculture sector being severely crowded out by exchange rate appreciation is rarely observed (Adam, 2005). For example, empirical analysis by the IMF (2005a) of Ethiopia's experience since 1991 did not find a link between real appreciation and aid inflows but did find that noncoffee exports had risen despite the increase in aid. Similarly, Nkusu (2004) reports a stable real exchange rate and strong growth in nontraditional exports for Uganda in recent years, despite high aid inflows. Evidence indicates that sound macroeconomic policies and important structural reforms protected these countries against the adverse consequences of aid inflows.

⁷⁵ The World Bank data show the country as experiencing a huge fall in headcount poverty during 1994-98, with the national data registering an increase in the same period. The country case study and recent work by the World Bank's poverty analysis team have gone some way toward settling the controversies and provide evidence of a long-term downward trend in poverty reduction, albeit with an upward spike in 1998, along with stable inequality.

Theory and evidence confirm the lack of any clear link between aid and the exchange rate. The conventional mechanism arises because aid increases the demand for nontraded goods, so the only way that the nontraded sector can respond is to draw resources from the traded sector, induced by a real appreciation. However, as emphasized by Adam (2005), since this mechanism is contingent on the supply response, more elaborate responses are possible if aid can directly influence supply capacity. For instance, the above finding from Ethiopia suggests that aid flows were used to boost export supply capacity, mitigating the Dutch disease effect. In Adam and Bevan's (2002) computable general equilibrium model for Uganda, if aid is used to enhance the supply response of nontraded goods, then the relative price adjustment is moderated and export levels can be sustained. The model incorporates a role for infrastructure as the primary driver of the economy-wide supply response because of the complex range of scale, scope, and network efficiencies that infrastructure can offer. In general, the key factor in maintaining exports is the avoidance of rising costs as the economy's output increases; the exchange rate is just one element of this relationship; for instance, Atingi-Ego (2005) documents relative price movements in Uganda that might be associated with Dutch disease, such as an increase in the relative price of nontradables in the 1990s. However, this could reflect a conventional Balassa-Samuelson effect of growth and may thus not be linked specifically to aid.

The impact of aid expenditures on poverty will depend on the poor's links to the labor market. These links may present policymakers with a growth-poverty trade-off. In the Adam and Bevan model, for example, aid has the highest return and promotes the highest growth rate when it is used to enhance the supply response of the nontraded sector, but the poor receive little benefit from this pattern of growth because their assumed links to the beneficiary urban sector are so weak. When aid is used to enhance the export supply response, the poor gain more because of their links to the export sector, but overall growth is lower as is the return on aid, and the relative price of nontradables increases substantially. However, the positive export effect may be even more important in the long run; Collier and O'Connell (2004) argue that productivity gains from export growth are the key missing driver of growth thus far for most SSA economies.

How aid is allocated between social sector and productivity-enhancing expenditure has a substantial economic impact. The World Bank's MAMS model of MDG attainment scenarios for Ethiopia (Sundberg and others, 2005) delineates some of the relevant effects.⁷⁶ The short-run wage effects of increased education provision, for example, can be substantial because employment in the sector has to rise while young unskilled cohorts leave the labor force to receive schooling. The timing of the return on education investments is delayed until this cohort returns to the labor force with better skills. These shifts of cohorts out of and into the labor force come up against infrastructure deficiencies and risk producing serious bottlenecks, which would undercut the immediate benefits of aid flows. Since social sector jobs are typically found in the formal sector, labor shortages that result in higher formal sector wages will be of small benefit to the poor, but will create difficulties for employers,

⁷⁶ The Maquette for MDG Simulations (MAMS) is one of several models developed by the World Bank to study Ethiopia's development options.

who must match wages in the formal sector, such as in manufacturing.⁷⁷ On the other hand, a front-loaded infrastructure investment program raises productivity throughout the economy, improving the supply response and relaxing the need for relative price adjustment. It also lowers the cost of social service delivery, making the social sector MDGs easier to achieve. Without infrastructure investments, the model forecasts that the sectoral MDGs can be achieved in Ethiopia only with very sizable aid inflows but at the cost of a real exchange rate appreciation, which would squeeze export capacity substantially by 2015.

An evaluation of the impact of aid inflows should take account of the policy reaction to inflows and not just the inflows. This is especially important for understanding the link between interest rates and aid. To the extent that an exchange rate appreciation attributable to aid inflows is undesirable, a common policy response is to attempt to offset the inflows through sterilization. However, sterilization operations can lead to higher interest rates and domestic market portfolios that are heavily weighted towards government bonds. Determining the role of sterilization operations in explaining increases in interest rates is difficult because high real interest rates have multiple causes. For instance, in Uganda and Ghana (according to the OPPG case studies), high interest rates are attributed to a combination of high domestic deficits, tight monetary policy, and inflation risk.⁷⁸ The case studies for these countries identify high real interest rates as an important factor in limiting pro-poor growth. The high borrowing rates were clearly a challenge for small firms and low-income borrowers, whom formal sector banks already view as high-transaction-cost borrowers.

Some studies have found that financial sector development benefits the poor, but the channels through which it occurs have not been determined. Impediments to financial intermediation can have a particularly adverse impact on the poor. Households with assets have access to the intermediation offered by the banking sector, but asset-poor households face much wider spreads between the return on savings and the cost of loans. Other channels linking financial development to poverty reduction are also possible, such as through the facilitation of private sector employment growth. Tsangarides and others (2004) report that financial sector deepening, as measured by the ratio of broad money to GDP, is positively associated with income growth for the bottom quintile of the income distribution, controlling for other factors. Beck and others (2004) find a similar link between the share of credit in GDP and income growth of the less well off.⁷⁹ Given that an evaluation of whether a policy is pro-poor should be based on direct measures of poverty, it is noteworthy that Beck and

⁷⁷ This channel from aid to manufacturing wages is the central element in Rajan and Subramanian's (2005) finding of negative effects of aid on recipient countries.

⁷⁸ However, Prati and Tresselt (2005) show that under some certain circumstances, a contractionary monetary policy response to aid might be optimal because a higher interest rate will help smooth aid inflows through saving.

⁷⁹ Some qualifications can be noted with regard to the results in Beck and others. Evidence is derived from cross-section regressions, which are vulnerable to bias because of unobserved heterogeneity. As with other studies, a policy is judged to be pro-poor if it has an effect on poverty or income distribution over and above that resulting from GDP growth alone. But this interpretation mingles two quite different data sources, and runs the risks explained in Deaton (2003).

others confirm that the link also holds when the World Bank's measures of poverty are used. Of themselves, however, these studies shed no light on the channels linking aggregate financial development to poverty reduction. Although household level studies, such as that by Khandker (1998), have been able to demonstrate that access to microcredit increases consumption, it has proved difficult to establish a similar causal link for overall financial sector development and poverty reduction.

C. Summary

Studies provide two types of guidance for policymakers on the sources of pro-poor growth. First, since growth is the most reliable long-run vehicle for poverty reduction, pro-poor growth policies overlap with growth policies. Second, there is large variation across countries in the rate of poverty reduction from a given rate of growth, and, as discussed above, useful tools and methods are available to better understand the nature of this variation. The complexity of the linkages between poverty, growth, and inequality means that only tentative lessons can be drawn for pro-poor growth. Nevertheless, some broad themes have emerged. The lessons build on the fact that the poor are disproportionately rural and depend on agriculture livelihoods, although past policies tended to center on employment in the urban formal sector. Countries have made substantial progress in unwinding explicit policy biases against the agriculture sector, but public spending on agriculture and rural sectors remains low. Since it is difficult for countries to mobilize additional domestic resources in the short run, they are faced with the closely intertwined challenges of raising agricultural productivity and allocating aid inflows prudently.

Recent studies highlight that countries stand to gain from spending aid inflows on public capital, because the induced increase in supply can protect sectors that would otherwise be constricted by relative price adjustments. To the extent that the economy's general productivity is enhanced, the efficiency of social sector provision also rises. These findings create a case for front-loading aid expenditures toward building absorptive capacity: for example, "general purpose technologies" like infrastructure and communications as well as human capital.

Clearly, there is no single recipe for pro-poor growth. Because data on poverty and inequality are available only on an infrequent basis, policymakers will require more proximate indicators of whether growth benefits the poor. The evidence here suggests that such measures as growth in agriculture, productivity growth at aggregate and sectoral levels, wage and price differentials, and interest rate spreads may provide indicators of the extent to which the environment supports pro-poor growth. However, strategies for pro-poor growth should be formulated on the basis of an analysis of the factors that limiting the participation of the poor in growth at the country level. Agence Française de Développement and others (2005) provide some guidelines on areas for analysis. The suggested lines of enquiry include, for example, sources of growth; the relationship between growth, changes in poverty and changes in income distribution; comparison with other countries in the region on key initial conditions affecting pro-poor growth (fertility, population density, inequality, climatic instability, role of agriculture); distribution of spending across sectors and benefit incidence of these expenditures; sources of income for the poor; and access of the poor to productive assets. Further country-level study is therefore warranted.

VI. CONCLUSIONS

Improvements in macroeconomic policies contributed strongly to the recovery of the fastest-growing economies of the 1990s and were strongest for countries with on-track IMF-supported programs. More favorable terms of trade also aided the stronger growth performance. However, different aspects of the growth recovery give mixed signals about its sustainability. While total investment has not increased significantly for the fast-growing economies (excluding Equatorial Guinea), TFP growth has improved strongly for the first time since the 1960s.

Clearly, the most challenging and difficult question facing SSA is how to generate large sustained accelerations in growth rates. Probit model analysis suggests that accelerations are associated with real exchange rate depreciations that spur strong trade growth, improvements in broad measures of policy and institutional soundness, and are also accompanied by increases in investment and TFP growth. Improved TFP growth, particularly pronounced in countries with on-track IMF programs, most likely reflected efficiency gains stemming from countries' implementation of macroeconomic and structural reforms. Encouragingly, a fair number of these countries succeeded in sustaining the acceleration for 10 years. They had stronger real exchange rate depreciations, higher investment, and lower debt burdens than countries that did not sustain their accelerations.

The in-sample predictive power of both the acceleration and sustained acceleration models, however, is relatively poor. Thus, many acceleration episodes occur when the explanatory factors in the model would not predict an acceleration, and many times, even though the variables associated with accelerations are conducive, an episode does not take place. There are clearly factors the model is not capturing, as well as country-level idiosyncratic factors that warrant further investigation in order to better guide policy.

Predicting the timing, or onset, of growth accelerations is even more difficult. Accelerations are spurred by economic liberalizations and political changes; and democratization plays an important role in the initiation of sustained growth accelerations. In-sample predictive power of the models is again poor, however.

Since growth is the most important long-run driver of poverty reduction, pro-poor growth policies overlap with growth policies. However, the rate of poverty reduction from a given rate of growth varies substantially across countries. SSA has experienced sizable changes in inequality since 1980, and it is important to analyze and orient policy toward growth, the elasticity of poverty to growth, and the distributional components of changes in poverty. Country level analysis of pro-poor growth policies is at an early stage. While many of the emerging lessons relate to sectoral, or micro-level issues, several macroeconomic issues have also been highlighted as key to assessing a country's ability to maximize the effect of growth on poverty. Among the issues are, for example, the importance of removing constraints to agricultural and rural sector growth, the potentially wide-ranging impact of infrastructure investments, and the management and allocation of aid inflows.

Some aspects of fiscal policy are moving in the right direction, but more progress is needed in this area and on trade and the financial sector to promote growth. Although reducing fiscal deficits in high-deficit countries is positively associated with growth, reductions below

certain thresholds are associated with much smaller growth improvements. Reliance on domestic financing of fiscal deficits is declining, and the composition of spending is generally moving in favor of social sectors, but capital spending has declined and infrastructure is improving slowly. Progress on financial development in the region has been fragile and uneven. Financial development appears more strongly correlated with growth in conditions of greater macroeconomic stability. On trade, bold reforms are required to contribute to the overall growth strategy for Africa. Consistent with recent evidence in the literature, fast-growing countries in SSA generally have better basic institutions than slow-growing countries. For the region as a whole, political institutions have continued to strengthen during the most recent period, but only very limited improvements in economic institutions have taken place since the second half of the 1990s.

Addressing the constraints on growth caused by the low levels of investment is a key priority for SSA. The very limited investment response to reforms in the region is a concern, particularly given that increases in investment appear to be necessary for sustained growth accelerations. The World Bank's 2005 *World Development Report* concluded that reducing the costs of doing business (from weak contract enforcement, inadequate infrastructure, crime, corruption, and regulation) and lowering policy-related risks and barriers to competition were key to improving the investment climate in developing countries. These obstacles are central for SSA, where 16 of the top 20 countries in the world with the most difficult business conditions are located.⁸⁰

There is also a role for well-targeted and efficient public investment that can crowd in private investment and productivity improvements. In addition to promoting domestic savings, higher aid inflows—consistent with absorptive capacity—and lower debt burdens are important for supporting higher and more efficient investment rates.

To make further progress in improving growth, SSA must implement additional reforms. The record shows that reasonable jumps in growth rates that are sustained for 10 years are possible. Growth accelerations in these countries need to be sustained further and spread to other countries in the region. However, even countries that have sustained a 10-year growth acceleration need to do more, because substantially higher per capita growth rates are needed if these countries are to make big strides in reducing poverty.⁸¹

⁸⁰ World Bank (2004b and 2005).

⁸¹ Countries with sustained accelerations have average annual per capita growth rates of at least 2 percent over 10 years. Estimates suggest much higher rates (5 percent) are needed for SSA to have a reasonable prospect of halving income poverty by 2015.

Table A2. Real GDP Per Capita Growth Performance Classification, 1960-2003
(Percent)

	1960-2003	1990-94	1995-99	1990-99	2000-03	
1 Equatorial Guinea	7.1	Mauritius	5.4	Equatorial Guinea	17.8	Equatorial Guinea
2 Botswana	6.9	Uganda	3.0	Rwanda	8.9	Sierra Leone
3 Mauritius	4.1	Seychelles	3.0	Mozambique	6.8	Botswana
4 Seychelles	2.4	Mali	2.8	Cape Verde	5.8	Chad
5 Cape Verde	2.3	Equatorial Guinea	2.7	Malawi	5.7	Mozambique
6 Swaziland	2.2	Burkina Faso	2.7	Angola	4.7	Mauritius
7 Burkina Faso	2.1	Ghana	2.0	Burkina Faso	4.6	Cape Verde
8 Comoros	1.8	Botswana	1.6	Mauritius	4.1	Tanzania
9 Mali	1.8	Chad	1.4	Uganda	3.9	Burkina Faso
10 Gambia, The	1.6	Lesotho	1.3	Botswana	3.8	Angola
11 Lesotho	1.5	Swaziland	1.3	Seychelles	3.7	Mali
12 Gabon	1.5	Guinea-Bissau	1.1	Mali	2.5	Nigeria
13 Mozambique	1.5	Cape Verde	1.1	Côte d'Ivoire	2.5	São Tomé and Príncipe
14 Cameroon	1.4	Benin	0.9	Lesotho	2.4	Zambia
15 Burundi	1.4	Mozambique	0.7	Senegal	2.4	Namibia
16 Chad	1.2	Namibia	0.7	Ethiopia	2.2	Senegal
17 Congo, Rep. of	1.2	Gabon	0.5	Guinea	2.2	Rwanda
18 Kenya	1.1	Gambia, The	0.1	Benin	2.2	Guinea
19 Tanzania	1.0	Nigeria	-0.1	Ghana	1.8	Chad
20 South Africa	0.9	Comoros	-0.4	Cameroon	1.7	Tanzania
21 Guinea-Bissau	0.9	Tanzania	-0.5	Tanzania	1.3	Gambia, The
22 Malawi	0.8	Zimbabwe	-0.5	Swaziland	1.2	Côte d'Ivoire
23 Nigeria	0.8	Burundi	-0.7	Burundi	0.7	Burundi
24 Guinea	0.7	Guinea	-1.2	Namibia	0.7	Zimbabwe
25 São Tomé and Príncipe	0.7	Senegal	-1.2	Kenya	0.6	Gabon
26 Uganda	0.7	Kenya	-1.3	Gambia, The	0.5	Nigeria
27 Benin	0.5	São Tomé and Príncipe	-1.8	Zimbabwe	0.5	Ethiopia
28 Ethiopia	0.4	Côte d'Ivoire	-1.9	Central African Rep.	0.4	Namibia
29 Togo	0.4	Malawi	-2.0	South Africa	0.4	Kenya
30 Rwanda	0.4	South Africa	-2.0	Niger	0.3	Comoros
31 Namibia	0.3	Ethiopia	-2.6	Togo	0.0	South Africa
32 Côte d'Ivoire	0.3	Congo, Rep. of	-3.1	Madagascar	0.0	Guinea-Bissau
33 Ghana	0.2	Togo	-3.1	Nigeria	-0.1	São Tomé and Príncipe
34 Angola	0.1	Madagascar	-3.1	Chad	-0.4	Niger
35 Zimbabwe	0.1	Niger	-3.2	Congo, Rep. of	-0.6	Togo
36 Niger	-0.1	Central African Rep.	-3.9	Gabon	-0.7	Madagascar
37 Sierra Leone	-0.2	Sierra Leone	-4.8	Comoros	-0.8	Angola
38 Zambia	-0.3	Zambia	-5.4	São Tomé and Príncipe	-1.1	Angola
39 Senegal	-0.8	Rwanda	-7.9	Guinea-Bissau	-2.8	Central African Rep.
40 Central African Rep.	-0.8	Angola	-8.2	Congo, Dem. Rep. of	-4.8	Congo, Rep. of
41 Madagascar	-1.2	Congo, Dem. Rep. of	-11.5	Sierra Leone	-13.5	Zambia
42 Congo, Dem. Rep. of	-2.7					Côte d'Ivoire
						Zimbabwe

Sources: World Bank, World Development Indicators database, 2004; World Economic Outlook (WEO) database, 2004; and IMF staff estimates.
Note: Data not available for Eritrea and Liberia.

Table A3. Real Per Capita Growth, Gross Fixed Capital Formation, and Total Factor Productivity (TFP) Growth

	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-03
	<i>(Percent)</i>						
Real per capita growth of GDP							
Sub-Saharan Africa	2.2	0.5	-0.4	1.0	-1.1	2.0	1.4
Without Equatorial Guinea	2.2	0.5	-0.5	1.1	-1.1	1.3	0.9
Oil-producing	4.9	-1.8	1.0	0.6	-2.5	6.3	4.4
Without Equatorial Guinea	5.2	-1.9	0.9	0.9	-3.5	1.0	1.4
Non-oil	1.7	0.9	-0.6	1.1	-0.8	1.3	0.9
	<i>(Percent of GDP)</i>						
Gross fixed capital formation							
Sub-Saharan Africa	22.1	23.0	20.9	18.7	20.1	22.2	19.9
Without Equatorial Guinea	21.7	22.6	20.6	18.7	19.7	20.6	19.0
Fast growers of 1990s	26.3	26.7	23.8	21.5	25.8	29.4	25.0
Without Equatorial Guinea	25.5	26.0	23.2	21.9	24.8	24.5	22.3
Medium growers of 1990s	19.6	20.2	18.6	17.1	16.9	18.0	18.7
Slow growers of 1990s	20.0	21.6	20.3	17.3	17.9	18.9	16.0
Oil-producing	27.5	28.7	26.9	22.9	24.2	35.7	26.8
Without Equatorial Guinea	25.5	26.9	25.8	24.2	21.6	24.3	20.1
Non-oil	21.2	22.1	19.9	18.0	19.4	20.0	18.8
CFA franc	24.4	24.2	22.7	20.1	19.1	23.8	22.6
Without Equatorial Guinea	23.4	23.2	21.9	20.3	17.7	18.5	19.8
Non-CFA franc	20.8	22.4	20.0	18.0	20.7	21.2	18.5
	<i>(Percent)</i>						
Total factor productivity growth							
Sub-Saharan Africa	0.2	-0.9	-1.7	0.6	-1.8	1.2	0.5
Without Equatorial Guinea	0.2	-0.9	-1.6	0.7	-1.9	0.8	0.1
Fast growers of 1990s	0.7	-0.8	-1.6	1.3	-0.3	3.3	1.7
Without Equatorial Guinea	0.7	-0.8	-1.4	1.5	-0.3	2.3	0.5
Medium growers of 1990s	2.1	-1.7	-2.3	0.4	-1.5	0.7	-0.9
Slow growers of 1990s	-1.9	-0.3	-1.2	0.2	-3.7	-0.4	0.7
Oil-producing	3.1	-4.6	-1.8	0.4	-2.7	3.7	3.7
Without Equatorial Guinea	3.1	-4.6	-1.2	0.7	-3.3	1.2	0.9
Non-oil	-0.3	-0.3	-1.7	0.7	-1.7	0.8	0.0
CFA franc	-1.2	0.0	-1.1	0.6	-1.1	2.0	1.4
Without Equatorial Guinea	-1.2	0.0	-0.8	0.8	-1.2	0.9	0.1
Non-CFA franc	1.3	-1.6	-2.0	0.6	-2.2	0.8	0.1
Program on track	n.a.	n.a.	n.a.	n.a.	-2.2	2.4	0.4
Program off track	n.a.	n.a.	n.a.	n.a.	-1.0	1.0	-1.0

Sources: IMF/WEO/Economic Trends in Africa database, 2004; staff calculations.

Note: For the early 1990s, TFP growth in countries with off-track programs without Equatorial Guinea is -1.1 percent, and, for the late 1990s, TFP growth in countries with on-track programs without Equatorial Guinea is 1.4 percent.

Table A4. Forgone Growth in Africa Relative to Other Regions

Robust Growth Determinants Estimated from a World Sample	Coefficients	Forgone Annual Growth					
		E. Asia/ Pacific	E. Asia/ Pacific 1990s	Europe/ Central Asia	Latin America/ Caribbean	Middle East/ N. Africa	South Asia
		<i>(Percent)</i>					
Log (inflation)	-0.0088	-0.1	-0.1	0.4	0.1	0.0	0.0
Fiscal balance (to GDP)	0.7031	-2.9	-3.4	-2.2	-1.9	1.9	-1.4
Log (investment to GDP)	0.0950	-8.7	-10.8	-8.5	-4.8	-5.1	-5.9
Log (govt consumption to GDP)	-0.0289	-1.0	-1.6	-0.5	-0.1	0.5	-0.5
Log (initial income)	-0.1678	23.9	26.0	17.7	18.1	14.3	6.0
Percentage of land in tropics	-0.1454	-9.7	-6.1	-13.5	-1.3	-12.2	-4.7
Terms of trade (growth)	0.0251	0.04	0.02	0.04	0.02	0.01	0.04
Black market premium	-0.0015	-0.06	-0.03	0.02	-0.04	-0.01	0.1
Log (overall schooling)	0.0556	-6.9	-5.4	-5.2	-5.0	-3.4	-2.5
Log (arable land)	-0.0188	-2.3	-3.1	0.7	-0.7	-0.5	-1.8
Forgone SSA growth "total"		-7.7	-4.6	-11.0	4.5	-4.7	-10.7
Forgone SSA growth due to policy (vars. 1, 2, 4, 8)		-4.1	-5.2	-2.3	-1.9	2.3	-1.9
Forgone SSA growth due to accumulation (vars 3, 9)		-15.6	-16.2	-13.7	-9.8	-8.6	-8.4

Source: Tsangarides (2005).

Notes: Draws on an expanded model specification. Bayesian model averaging techniques are applied using a panel data system generalized method of moments (GMM) estimator.

Table A5. Relative Impact of Robust Variables on Growth
(Period-to-period changes from 1980-84 to 1995-2000, in percentage points)

	All Variables	Policy Variables	Terms of Trade	Investment
Sub-Saharan Africa	2.4	4.9	0.1	-0.4
Fast growers of the 1990s	4.1	7.8	0.6	2.4
Medium growers of the 1990s	1.2	3.0	0.9	-3.1
Slow growers of the 1990s	0.3	5.4	-8.1	-4.8
Oil	-1.6	1.3	-4.3	-9.8
Non-oil	2.4	5.8	-1.2	-0.6
Program	2.3	6.1	-1.9	-1.9
Nonprogram	2.7	1.2	6.1	4.1
Program on track	5.6	12.4	-0.6	-1.8
Program off track	-1.4	-0.7	-3.3	-1.9
CFA franc	-0.5	1.3	-2.9	-3.6
Non-CFA franc	3.8	6.7	1.6	1.2
Coastal	2.2	7.1	-5.5	-1.5
Landlocked	2.2	3.6	0.8	1.2
Resource-intensive	1.2	3.9	3.3	-5.9

Source: IMF staff calculations.

Notes: Robust variables identified using expanded specification from Tsangarides (2005).

Policy variables: inflation, government consumption to GDP, fiscal balance to GDP, black market premium; other variables include terms of trade, investment to GDP, overall schooling. Fixed factors such as percent of land in tropics, arable land, and initial income are included in regression, but not in above calculation.

Table A6. Quality of Macroeconomic Policies, 2003-04

	Monetary Policy		Fiscal Policy		Composition of Public Expenditure		Consistency of Policy Mix		Governance in the Public Sector		Governance and Transparency in Monetary and Financial Institutions		Trade Regime	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
	SSA	3.9	4.2	2.8	2.8	2.6	2.3	3.2	3.3	2.7	2.8	3.6	3.6	3.8
Oil-producing	3.1	4.2	2.2	3.1	2.0	2.7	2.5	3.5	2.0	2.9	2.8	4.2	2.9	4.6
Non-oil	3.2	4.1	2.3	2.8	2.2	2.4	2.6	3.3	2.3	2.9	2.9	3.7	3.1	4.2
Coastal	3.1	4.2	2.2	3.1	2.0	2.7	2.5	3.5	2.0	2.9	2.8	4.2	2.9	4.6
Landlocked	3.9	4.3	2.9	2.6	2.7	2.2	3.2	3.2	2.7	2.8	3.6	3.5	3.8	4.0
Resource-intensive	2.2	4.0	1.4	2.7	1.2	2.1	1.8	3.4	1.5	2.8	2.1	3.3	2.0	3.8
CFA	3.9	4.5	2.3	2.6	2.0	2.1	2.6	3.2	1.9	2.3	3.3	4.4	3.1	4.6
Non-CFA	2.7	3.9	2.1	2.8	2.0	2.5	2.4	3.4	2.2	3.1	2.6	3.2	2.8	3.8
Program	3.7	4.2	2.8	2.9	2.5	2.4	3.1	3.5	2.5	2.8	3.4	3.6	3.5	4.1
Non-program	1.2	4.0	0.5	2.5	0.7	2.1	0.7	3.0	1.0	2.8	1.2	3.7	1.3	4.0
Program-on	3.7	4.3	2.9	2.9	2.5	2.5	3.2	3.5	2.6	2.8	3.4	3.5	3.5	4.1
Program-off	3.8	2.0	1.5	2.0	1.8	1.5	1.8	3.0	1.3	2.8	2.8	4.3	3.5	4.5
Other LIC	4.2	4.2	3.2	3.4	2.4	2.3	3.4	3.5	2.8	2.8	3.7	3.6	4.3	4.2

Source: IMF staff assessments.

Note: Indicators are rated 1 to 5, with 1 and 5 being respectively the most negative and most positive ratings.

Table A7. Top and Bottom Performers by Growth Benchmarking

	1960-2000			1990-2000			
	Actual	Predicted	Difference	Actual	Predicted	Difference	
	Growth	Growth		Growth	Growth		
Top 10				Top 10			
Botswana	6.73	0.90	5.83	Uganda	3.25	-0.19	3.44
Seychelles	2.83	0.11	2.73	Mauritius	4.74	1.75	2.99
Mauritius	3.86	1.92	1.94	Botswana	2.87	-0.10	2.97
Mali	0.35	-0.66	1.01	Seychelles	3.19	0.37	2.82
Gambia, The	1.44	0.44	1.01	Burkina Faso	3.21	0.45	2.77
Equatorial Guinea	1.23	0.38	0.95	Mali	1.87	-0.72	2.58
Nigeria	0.65	-0.18	0.83	Mozambique	2.92	0.71	2.21
Kenya	1.28	0.50	0.78	Ghana	1.82	-0.06	1.88
Congo, Rep. of	1.23	0.47	0.76	Benin	1.60	-0.16	1.76
Cote d'Ivoire	0.50	-0.09	0.59	Namibia	0.63	-0.45	1.07
Bottom 10				Bottom 10			
Angola	-0.72	0.17	-0.89	Rwanda	-1.37	0.66	-2.02
Togo	-0.33	0.59	-0.92	Congo, Rep. of	-1.43	0.66	-2.09
Niger	-0.60	0.48	-1.07	Togo	-2.10	0.05	-2.15
Madagascar	-1.34	0.17	-1.52	South Africa	-0.67	1.51	-2.17
Senegal	-0.85	0.73	-1.58	Central African Rep.	-1.82	0.61	-2.43
Central African Rep.	-0.55	1.03	-1.58	Cameroon	-2.58	0.45	-3.03
South Africa	0.53	2.13	-1.60	Angola	-2.62	0.68	-3.30
Ethiopia	0.28	1.89	-1.61	Zambia	-3.28	0.35	-3.64
Zambia	-0.92	0.78	-1.70	Sierra Leone	-8.56	0.18	-8.74
Sierra Leone	-1.89	0.25	-2.14	Congo, Dem. Rep. of	-8.22	0.18	-8.40

Source: Staff calculations from data in O'Connell (2004) and the WEO database.

Table A8. Real Per Capita GDP Growth Rates, 1980-2003

	Unweighted				GDP Weights				Population Weights			
	1980-89	1990-94	1995-99	2000-03	1980-89	1990-94	1995-99	2000-03	1980-89	1990-94	1995-99	2000-03
Sub-Saharan Africa	0.13	-1.06	2.03	1.36	-0.71	-1.66	1.02	1.15	-0.26	-1.37	1.23	1.24
Fast growers of the 90s	1.47	1.91	5.81	3.28	-0.72	2.19	3.97	3.42	-0.23	1.69	4.24	2.22
Medium growers of the 90s	-0.59	-1.09	1.52	-0.13	-0.86	-0.92	0.98	0.15	-0.49	-1.05	1.01	0.86
Slow growers of the 90s	-0.50	-3.99	-1.25	0.94	-0.44	-2.83	0.40	1.39	0.14	-3.79	-0.11	1.38
Oil-producing countries	0.23	-2.45	6.32	4.37	-1.21	-2.99	0.77	2.24	-1.02	-1.60	0.57	2.35
Non-oil countries	0.11	-0.82	1.31	0.86	-0.58	-1.44	1.08	0.82	0.00	-1.29	1.46	0.84
CFA countries	-0.27	-0.76	3.21	1.73	-0.45	-2.44	1.77	0.23	-0.43	-1.50	1.95	0.69
Non-CFA countries	0.30	-1.20	1.44	1.18	-0.68	-1.48	0.89	1.31	-0.23	-1.34	1.09	1.35
Program countries	-0.50	-1.05	2.42	0.75	-0.18	-1.33	1.79	1.21	0.16	-0.92	1.95	1.40
Nonprogram countries	0.87	-1.62	1.04	1.83	-1.54	-2.02	0.60	1.09	-1.19	-3.04	0.20	0.33
Program-on track countries	..	-1.04	3.28	1.38	..	-1.23	2.46	1.68	..	-0.86	2.16	1.60
Program-off track countries	..	-0.98	1.26	-1.91	..	-1.68	1.41	-4.56	..	-1.18	1.82	-4.32

Source: World Economic Outlook database, 2005.

Table A9. Differences Between Sample Averages:
Sustained and Unsustained Accelerations

	Difference in Means During an Episode
Openness	7.3
Real export growth	15.1
Debt service	-5.8
NPV of debt/exports	-0.9
Aid/GDP	3.5
Polity index	1.8
Investment/GDP	3.1

Source: IMF staff calculations.

Notes: All reported differences are significant at the 10 percent level. A sustained acceleration is one where the average per capita growth was at least 2 percent for five years after an acceleration ends. Mozambique in 1986 was excluded as a case of sustained acceleration because the period in question overlapped with its postconflict recovery.

Table A10. Probit Coefficient Estimates for Probability of a Country Being in an Acceleration in a Year, 1980-2004 Robustness Checks

	Random Effects		Instrumental Variables	
	Marginal coefficient	p-value	Marginal coefficient	p-value
Inflation	-0.005	0.48	0.002	0.66
Deficit	0.031	0.10	-0.001	0.75
Aid	-0.030	0.01	-0.009	0.32
Debt service	-0.002	0.85	0.010	0.13
Debt Net Present Value Burden	0.190	0.01	0.090	0.01
Real exch rate	-0.020	0.01	-0.010	0.01
Partner growth	0.230	0.01	0.120	0.06
Country Risk	0.004	0.98	1.070	0.01
Sachs-Warner	0.510	0.13	0.520	0.04
Coastal	0.800	0.04	-0.230	0.32
Resource Rich	0.990	0.02	0.090	0.69
Investment	0.010	0.50	-0.007	0.64
Total Factor Productivity	6.02	0.01	3.56	0.08
p-value for Chi2 test		0.01		0.01
Pseudo R2		..		0.22
Percent of acceleration years predicted		40		73
Percent of predicted acceleration years incorrect		68		75

Source: IMF staff calculations.

Notes: For computational reasons, the estimates reported here are the probit equation coefficients and not the marginal values. Thus results can be compared with Table 4 in terms of which variables are significant, but not in terms of magnitude.

Table A11. Probit Marginal Estimates for the Probability of an Acceleration Beginning in a Year, 1980-2004

	1980s	1990s	All	All (HPR)
Economic Liberalization	0.03 <i>0.55</i>	0.11 <i>0.04</i>	0.09 <i>0.03</i>	0.1 <i>0.01</i>
Big terms of trade shocks	-0.02 <i>0.64</i>	0.05 <i>0.18</i>	0 <i>0.98</i>	0.04 <i>0.08</i>
Political transition	0 <i>0.99</i>	0.18 <i>0.21</i>	0.04 <i>0.56</i>	
Regime change (democracy)	0.12 <i>0.5</i>	0.09 <i>0.09</i>	0.06 <i>0.25</i>	0.12 <i>0.01</i>
Regime change (autocracy)	0.32 <i>0.01</i>	0.22 <i>0.01</i>	0.24 <i>0.01</i>	0.02 0.68
Percent of acceleration years predicted	16	37	34	23
Percent of predicted acceleration years incorrect	60	77	78	82

Source: IMF staff calculations.

Notes: Each cell in a variable row shows the marginal coefficient thereof with p-value shown below in italics. The goodness of fit statistics compare outcomes to estimated probabilities and are explained in the text.

Table A12. Probit Marginal Estimates for Probability of a Country Having a Sustained Acceleration in a Year, 1980-2004

	Marginal coefficient	p-value	Marginal coefficient	p-value
Inflation	0.004	0.51	-0.005	0.30
Budget balance	-0.013	0.31	-0.007	0.48
Aid	0.013	0.18	0.016	0.04
Debt service	-0.013	0.02	0.007	0.17
Debt Net Present Value Burden	-0.060	0.06	-0.040	0.09
Real exchange rate	-0.007	0.09	-0.001	0.90
Partner growth	0.080	0.15	-0.019	0.56
Country Risk	0.050	0.60	0.090	0.26
Sachs-Warner	-0.050	0.85	0.009	0.97
Export growth	0.005	0.18		
Coastal	0.490	0.01		
Investment	0.017	0.03	0.016	0.03
Total Factor Productivity Growth	0.640	0.63	1.100	0.16
p-value for Chi-squared test		0.01		0.33
Pseudo R-squared		0.31		0.14
Percent of acceleration years predicted		89		87
Percent of predicted acceleration years incorrect		47		38

Source: IMF staff calculations.

Notes: The marginal coefficient is the change in the probability for an infinitesimal change in the independent variable x , evaluated at the mean value of x . The p-value is the analog of the usual regression test for the probit coefficient being zero. The country risk measure is the World Bank's Country Policy and Institutional Assessment. Base set refers to the set of accelerations shown in text table. Results with a smaller set of accelerations are shown in the right two columns. These require 3.5 percent growth, as in Hausmann and others (2004).

Table A13. Probit Marginal Estimates for the Probability of a Sustained Acceleration Beginning in a Year, 1980-2004

	Base set	With 3.5% growth
Economic Liberalization	0.42 <i>0.04</i>	0.21 <i>0.20</i>
Big terms of trade shocks	0.19 <i>0.16</i>	0.08 <i>0.60</i>
Recent civil conflict	-0.20 <i>0.09</i>	-0.13 <i>0.41</i>
Regime change (democracy)	0.31 <i>0.09</i>	0.36 <i>0.05</i>
Regime change (autocracy)	0.09 <i>0.55</i>	0.12 <i>0.69</i>
Percent of acceleration years predicted	27	66
Percent of predicted acceleration years incorrect	50	36

Source: IMF staff calculations.

Notes: The upper rows show the indicated variable's marginal coefficient with the p-value below in italics.

Goodness of fit, in the lower two rows, is assessed at a 0.5 cutoff probability. Base set refers to the set of accelerations shown in text table. Results with a smaller set of accelerations are shown in the rightmost column. These require 3.5 percent growth, as in Hausmann and others (2004).

Table A14. Changes in Real GDP Growth and Lagged Deficit Change

	High deficit		Low deficit	
	2002-04 Compared with 1999-2001			
	Lagged change in deficit	Change in growth	Lagged change in deficit	Change in growth
Deficit worsened	-1.9	-0.8	-2.0	-0.3
Deficit improved	3.8	2.9	3.3	-0.5

Sources: IMF, WEO/Economic Trends in Africa database, 2004; and IMF staff calculations.

Table A15. Subperiod Averages for Budget Balance, Growth, and Domestic and Foreign Financing
(Percent of GDP)

Period	Group	Government		Domestic Financing	Foreign Financing
		Balance	GDP Growth		
2000-04	Africa	-3.5	4.2	1.1	3.1
	CFA franc	-1.1	4.8	-1.0	2.4
	Oil	2.6	7.7	-1.9	-0.7
	Program	-2.7	4.2	0.9	3.6
1995-99	Africa	-4.9	4.6	1.7	2.3
	CFA franc	-3.5	5.6	0.5	2.7
	Oil	-6.2	9.0	1.6	0.6
	Program	-3.3	4.7	1.0	2.2
1990-94	Africa	-6.3	1.5	1.2	4.2
	CFA franc	-6.3	1.8	0.6	5.4
	Oil	-9.2	0.2	1.1	7.8
	Program	-5.6	1.5	0.7	4.1

Sources: IMF, WEO/Economic Trends in Africa database, 2004; and staff calculations.

Table A16. Growth Benefits of Infrastructural Development:
Improvements to Levels of SSA Leader

	Stocks	Quality	Total
Botswana	4.4	0.7	5.1
Burkina Faso	7.8	0.9	8.7
Cote d'Ivoire	4.2	0.8	5.0
Ethiopia	8.4	0.5	9.0
Ghana	5.0	0.4	5.4
Guinea	6.5	0.8	7.4
Guinea Bissau	6.6	0.9	7.4
Kenya	5.6	1.0	6.7
Lesotho	..	0.8	..
Madagascar	6.9	0.9	7.8
Mali	9.0	0.9	9.8
Mauritius
Niger	9.5	0.9	10.4
Nigeria	5.3	1.2	6.5
Rwanda	7.3	0.7	8.1
Senegal	5.6	0.6	6.1
Sierra Leone	5.8	0.8	6.6
South Africa	0.6	0.2	0.8
Tanzania	6.8	1.0	7.9
Uganda	7.3	0.9	8.2
Zambia	4.5	0.3	4.7
Zimbabwe	3.7	0.5	4.2

Source: Calderon and Serven; IMF staff calculations.

Note: The sub-Saharan African country with the highest stock and quality of infrastructure is Mauritius. The calculation of the potential growth payoffs are based on the preferred GMM-IV system estimates from Calderon and Serven 2004.

Table A17. Country Classification by Financial Development and Growth Performance

	Percent			Percent of GDP			
	Real Growth	Growth Per Capita	Inflation	Financial Development	Fiscal Balance	Private Investment	Private Savings
1960-2003							
High financial development							
Fast growth	4.9	2.3	11.3	35.9	-4.2	16.1	15.0
Slow growth	3.0	0.4	16.4	33.3	-8.6	10.1	10.6
Low financial development							
Fast growth	3.9	1.4	16.2	17.5	-4.8	8.4	9.7
Slow growth	2.4	-0.3	14.8	17.3	-4.8	8.1	4.9
Oil-producing countries	4.5	2.0	9.2	18.0	-5.2	21.0	10.9
1997-2003							
High financial development							
Fast growth	5.4	3.2	9.0	37.5	-5.4	14.6	12.6
Slow growth	1.2	-0.8	18.4	44.5	-5.5	13.3	11.5
Low financial development							
Fast growth	5.3	2.3	4.9	15.3	-3.7	11.1	7.6
Slow growth	1.7	-1.0	10.7	18.9	-3.5	8.0	7.5
Oil-producing countries	8.1	5.3	5.0	15.8	-1.6	22.5	12.6

Source: IMF, WEO database, 2004.

Notes: Financial development is measured as liquid liabilities over GDP. Growth and financial development are averaged over 1960-2003. Investment and savings are available only since 1970 and fiscal balances since 1980. Angola and the Democratic Republic of Congo are dropped from the sample to compute the average inflation rate.

Table A18. Headcount Poverty and Inequality

	Head-count	Gini	Survey year	Head-count	Gini	Survey year
	World Bank data			National data		
Burkina Faso	63	51	1994	56	0.47	1994
	30	47	1998	62	0.45	1998
				47	0.45	2003
Senegal	45	54	1991			
	22	41	1994	67	na	1994
				36	na	2001
Ghana	47	35	1987			
	45	36	1988	52	0.37	1991/92
	45	41	1998	40	0.39	1998/99
Uganda	88	44	1989			
	88	43	1992	56	0.36	1992
	86	37	1996	45	0.35	1997
	85	43	1999	34	0.40	2000
				38	0.43	2003
Zambia	65	60	1991	69	0.59	1991
	74	53	1993			
	73	50	1996	79	0.50	1996
	64	53	1998	75	0.49	1998

Sources: Global Poverty Monitoring, World Bank; national data from authorities.

Note: National data are drawn from the pro-poor growth case studies. Where the survey years between the two sources do not directly match, they are aligned at the closest corresponding year.

Table A19. Case Study Countries

	Period	Mean Growth in Survey Income and Pro-Poor Growth		Growth and Inequality Decomposition of the Change in Poverty	
		Growth	Pro-Poor Growth	Growth component	Inequality component
Burkina Faso	1994-2003	0.9	1.0	-3.2	-4.5
	1994-1998	-4.7	-5.2	7.5	-3.4
	1998-2003	5.6	6.6	-13.7	-1.7
Senegal (Dakar)	1991-1994	n.a.	-0.2	na	na
	1994-2001	n.a.	2.0	na	na
Ghana	1991/92- 1998/99	3.2	2.1	-13.1	0.9
Uganda	1992-2003	3.0	2.7	-26.3	8.3
	1992-1997	3.6	3.9	-10.3	-0.4
	1997-2000	6.0	4.8	-16.3	5
	2000-2003	-0.9	-1.7	-1.4	5.3
Zambia	1991-1998	n.a.	1.1	5.9	-0.4
	1991-1996	n.a.	-1.1	9.8	-0.5
	1996-1998	n.a.	2.2	-4.4	0.8

Source: Pro-poor growth case studies.

Notes: Statistics refer to data from the household survey. The change in the headcount is decomposed into components due to growth and inequality following the method of Datt and Ravallion (1992). The sum of the two components equals the total change in national headcount poverty over the indicated period.

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