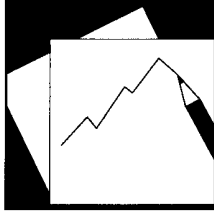


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IMF Working Paper

The Quality of the Recent High-Growth Episode in Sub-Saharan Africa

Marcelo Martinez and Montfort Mlachila

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African Department

The Quality of the Recent High-Growth Episode in Sub-Saharan Africa

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Abstract

The paper explores the quality of the recent high-growth episode in sub-Saharan Africa by examining the following two questions: (i) what has been the nature and pattern of SSA growth over the past 15 years and how does it compare with previous episodes? (ii) has this growth had an impact on socially desirable outcomes, for example, improvements in health, education and poverty indicators? To do this, the paper first examines various aspects of the fundamentals of growth in SSA—levels, volatility, sources, etc.—according to various country analytical groupings. Second, it explores the extent to which the growth has been accompanied by improvements in social indicators. The paper finds that the quality of growth in SSA over the past 15 years has unambiguously improved, although progress in social indicators has been uneven.

JEL Classification Numbers: O40, O55, I10, I20, I32

Keywords: Quality of growth, social indicators, sub-Saharan Africa

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I. INTRODUCTION

Economic growth in sub-Saharan Africa (SSA) has increased markedly since the mid-1990s. For the region as a whole, real GDP grew at an average rate of 4.3 percent between 1995 and 2009 and real per capita GDP growth averaged about 1.8 percent over that same period. What is striking is that for the first time since 1970s, there were a large number of countries that benefited from high growth. According to IMF (2008), the high growth episode in SSA countries was predicated on the fact that countries got the critical basics right and avoided major policy failures. Fast-growers have achieved macroeconomic stability, including stable and low inflation and debt sustainability, pursued sound economic policies, and reinforced their institutions. At the same time, higher aid (including through debt relief) has contributed to the takeoff.

There is considerable debate as to whether the recent episode of high growth in sub-Saharan Africa was based on solid fundamentals, broad-based, and likely to be sustainable. Some authors, e.g., Arbache and Page (2010), argue that the post-1995 growth acceleration was not accompanied by improvements in variables often correlated with long-run growth, such as investment, and therefore that it is fragile. It is therefore interesting to assess whether the underlying “quality” of growth has been good.

At the same time, there is widespread recognition that high growth over the long run is necessary to achieve lasting improvements in social outcomes. However, as pointed by Todaro (1994), “it is not just the mere fact of rapid growth per se that determines the nature of its distributional benefits but more the character of economic growth”. How it is achieved, who participates, which sectors lead or thrive, what institutional arrangements are designed and emphasized, are questions that determine the efficiency of growth in achieving socially desirable outcomes, such as poverty reduction. This is another reason to analyze the concept of quality of growth.

The issue of the quality of growth has received increasing prominence over the past few years. While international financial institutions have talked about the quality of growth since the 1990s, surprisingly, the quality of growth is a concept that is not rigorously defined and well-documented in the academic literature. Apart from Thomas et al. (2000) who define it as: “Investing in people, sustaining natural resources, managing risks, and improving governance, are dimensions that make up quality of growth”, there are hardly any references to it in the academic literature, although policymakers have often referred to it. Moreover, this definition is rather vague and limited in its empirical applications.

In this paper we propose to define the quality of growth on the basis of two features. First, it is important to examine its intrinsic features, i.e., its fundamental nature in terms of its strength (level), volatility, and sustainability. Second, it is necessary to analyze the impact of growth on several socio-economic outcomes. With these two aspects in mind, good quality growth can be defined as one that is strong, stable, sustainable, increases productivity and leads to socially desirable outcomes, like improved standards of living, especially in the reduction of poverty.

The paper explores the following two questions: (i) what has been the nature and pattern of SSA growth over the past 15 years and how does it compare with previous episodes? (ii) has this growth had an impact on socially desirable outcomes, for example, improvements in health, education and poverty indicators? To do this, the paper first examines various aspects of the fundamentals of growth in SSA—levels, volatility, sources, etc.—according to various country analytical groupings. Second, it explores the extent to which the growth has been accompanied by improvements in social indicators. The paper does not analyze in detail the interrelation between growth and various social indicators, nor does it aim to revisit the explanatory factors of SSA growth that are well documented elsewhere (e.g., IMF, 2008).

The main findings of the paper are the following. First, the recent high growth episode in SSA is characterized by a strong real GDP growth and real GDP growth per capita that is quite broad-based geographically. Second, it has been less volatile than in the previous fifteen years. Third, it has been accompanied by productivity improvements. Low- and middle-income countries exhibit more broad-based growth. Fourth, there has been an overall shift from inward to more outward-oriented growth, since the participation of the net exports has been increasing in all SSA countries on average, although most of the growth is in fact based on domestic demand. At the same time, on average gross investment has played an important role in explaining the growth path after 1995.

That said, the amelioration in growth performance has been accompanied by uneven improvements in social indicators. While there has been a significant improvement of social indicators such as infant mortality and school enrollment at the secondary level, there is less impact on primary school enrollment and life expectancy at birth. Finally, the paper finds that improvements in social indicators are generally higher in low-income and fragile countries, albeit from a low level.

The next section presents a few notes on the literature concerning the nature of economic growth and its impact on socially desirable outcomes. After that we describe briefly the methodology and the data we are using in this paper in Section III. Section IV investigates the nature of the recent high growth episode in SSA considering the strength, the volatility, the sectoral and the demand composition of output. Section V aims to explore the evolution of selected social indicators. Section VI concludes.

II. LITERATURE REVIEW

A. Overview

This section proposes to examine selectively what the literature says about the nature of growth and its effects. First, the section will focus on the nature of growth, and the following issues will be examined in detail:

- Sustained growth is necessary for a lasting improvement in socio-economic well-being. What makes growth sustained?
- What are the causes and effects of growth volatility?

- Good quality growth should only not be a result of higher levels of inputs, but also, more fundamentally, of efficiency gains, or total factor productivity (TFP). What are the determinants of TFP growth?
- Whether growth emanates from one sector or is more broad-based matters on whether it is likely to be sustained and to have a wider impact. What does the literature say on this issue?
- Whether the growth strategy is inward-looking or export-oriented has important implications on its strength and sustainability. A quick summary of the empirical evidence will be provided.

The section will then discuss what the literature says about the effects of growth on education, health and poverty outcomes.

B. The Nature of Growth

Sustained Growth

According to Johnson et al. (2007), the concept of sustained growth usually indicates a growth path that could be maintained even after 10 or 15 years. Even if the same authors emphasize that there is not a general theory of sustained growth, many attempts have been made in order to identify the main characteristic associated with episodes of sustained growth.

For instance, Hausmann et al. (2005) provide evidence for 80 episodes of growth longer than 8 years. They find that growth accelerations are correlated with increases in investment and trade, real exchange rate depreciations, and economic reforms. Analyzing the duration of growth “spells” for 140 countries, Berg et al. (2008) find that it is positively related to: the degree of equality of the income distribution, democratic institutions, manufactures export orientation, FDI openness, avoidance of exchange rate overvaluation, and macroeconomic stability.

Focusing on Africa, Imam and Salinas (2008) using probit analysis for a group of 22 West African economies for the period 1960–2006 confirm the results of Berg et al. (2008). Johnson et al. (2007) conclude that what are usually regarded as first-order problems—broad institutions, macroeconomic stability, trade openness, education, and inequality—may not now be main constraints for Africa, which are instead the extent of ill-health, internal conflict, and societal fractionalization. Duttagupta and Mlachila (2008), using nonparametric methods, argued that strong long-run growth is not due to just having a particular set of “correct” variables, but is more the result of a complex set of interacting factors, the process of which is not always well understood. They argue that geographical “luck” and favorable external environment, combined with trade openness and strong human capital play an important role.

Finally, Beny and Cook (2009) argue that the recent high growth episode in SSA countries is caused by two factors: improved macroeconomic management and the “boom” of mineral

resources prices. Arbache and Page (2010) argue that the Africa's recent takeoff is fragile because it is not accompanied by improvements in variables often correlated with long run growth, such as investment and substantial policy and governance improvements.

Volatility

Developing countries are characterized by high output volatility. According to van der Ploeg and Poelhekke (2009), this pattern is the result of the following factors: (i) high dependency on natural resources; (ii) volatility of the terms of trade due to highly concentrated exports of primary commodities; and (iii) poorly developed financial systems. Furthermore, they show that landlocked countries have more volatile growth than countries with easy access to waterways. Remote countries have less access to markets, less diversified exports, and greater volatility of output growth. Easterly and Kraay (2000), and Furceri and Karras (2007) argue that large countries are less volatile than small countries. Finally, Cavalcanti Ferreira et al. (2010) and KanTang (2002) establish the linkages between technical progress and reduction of output volatility.

Volatility is bad for growth. The best-known findings that more volatile countries display slower growth are from Ramey and Ramey (1995). According to their estimates, if SSA had the same volatility as East Asia and the Pacific, its average annual growth rate would be 0.96 percentage point higher. After controlling for endogeneity, Badinger (2010) confirm this result for 128 countries.

Volatility affects consumption. Barlevy (2004) argues that economic fluctuations reduce welfare by affecting the growth rate of consumption. Furthermore, Malik and Temple (2009) mentioned that the adverse effects should be felt particularly strongly by families living in poverty. They argue that this is due to lack of liquidity (wealth or access to credit) that could smooth consumption. As well as being a significant source of risk for the poor, the uncertainty associated with short-run output variations can also translate into lower investment and reduced economic growth.

Total Factor Productivity

Total-factor productivity (TFP) refers to the effect on output that is not caused by an input variation. Equation (1) shows the usual Cobb-Douglas production function. The total output (Y) is a function of total factor productivity (A), capital input (K), labor input (L). A rise in either A , K or L will lead to an increase in output. The Solow-Swan model asserts that TFP is the real driver of growth within an economy:

$$Y = AK^{\alpha}L^{\beta} \quad (1)$$

Hall and Jones (1999), Caselli (2005), and Jerzmanowski (2007) among others, provide well-grounded evidence that physical capital and education are important sources for the differences in per capita income across countries. Arezki and Cherif (2010) present an interesting stylized fact that the explanatory power of TFP in explaining the income differences among countries—including in SSA—has been increasing over time worldwide.

Rapid TFP growth can be explained in poor and small open economies by two arguments. First, aggregate productivity gains can be achieved through an adjustment policy addressing macroeconomic disorders (e.g., reduction of exchange rate black market premium or low inflation due to better macroeconomic management). Second, improved productivity can result from structural changes, i.e., allocation of factors to more productive activities, which contributes to a sustained growth path. Hence to maintain a sustainable growth process, a balanced mix of capital accumulation and structural change it is required, while adjusting macroeconomic policies is necessary in order to keep distortions at the lowest possible level (Berthélemy and Söderling, 2001).

Sectoral Composition of Growth

Following the 1990 World Bank Development Report, the concept of “broad-based growth” has been seen as a key component of the strategy to reduce poverty. However, as pointed out by White and Anderson (2001), the definition of broad-based growth was not explicit, and could be related to the labor intensity of growth, its geographical or distributional impact or the sectoral pattern of growth.

Fagerberg (2000) argues that structural change—usually understood as movement of workers and other resources from agriculture to industry—on average has not been conducive to productivity growth, but countries that have increased their “presence” in the technologically most progressive industry (electronics) have experienced higher productivity growth than other countries. The composition effect can explain a substantial amount of the observed differences in aggregate TFP levels across countries, and consequently income differences (Alonso-Carrera, 2010).

Sectoral composition of growth can also affect poverty. Several studies (Kraay 2006, Loayza and Raddatz 2010, and Khan 1999) demonstrate that growth in certain sectors, can be more poverty-reducing than others sectors. This is due mainly to the fact that different sectors hire poor people with different intensities. For instance, agriculture and clothing manufacturing are likely to hire more workers than oil extraction.

Demand Composition of Output

It is widely agreed in the literature that outward orientation is good for growth. Yang (2008) identifies 81 high growth episodes, in a large sample of countries covering the period 1958 and 2004. He notes that in almost all these high growth episodes exports grew faster than GDP.

The strong relation between growth and exports suggests technological improvement in the exportable sector. Openness to foreign markets affects productivity growth through several mechanisms: imports of advanced technology, discipline of the world market, incentive effects of competition, transfer of knowledge, foreign direct investment, etc. The broader learning associated with openness influences all aspects of production capabilities (Diao, et al., 2006).

Contrary to what is widely believed, decomposing Africa's GDP growth into its two components—growth in domestic demand and growth in net exports (exports minus imports)—shows that the major share was due to domestic demand changes, and only a small portion to changes in net exports. Devarajan argues in his blog² “that one reason for that could be, as export earnings surged, African countries imported a lot, leaving the change in net exports (and hence their contribution to GDP growth) quite small”.

C. Socially Desirable Outcomes

Education and Health

Endogenous growth theory suggests a strong linkage between human capital investment and growth (Romer, 1990). The concept of human capital includes education, health, training and other investments that enhance an individual's productivity. The health, education, and growth relationship is dynamic and complementary. Health capital increases the efficiency with which individuals produce education (Schultz, 1999), and other forms of human capital. More productive human or physical capital leads to more growth. A fraction of the increased income is spent on investment in human capital, which induces more income growth. Moreover, given that long-term growth is fueled by technical progress—itsself the product of increased health, education, and training—increased health can raise the growth rate of income through technical innovation.

Empirical evidence confirms this two-way relationship between investment in education and growth for African economies. The stock of education is source of growth but as economies are growing the investment in education tends to increase (e.g., Oketch, 2006 and Seetanah, 2009). Seetanah (2009) shows that in an average growing SSA economy the rate of school enrollment will tend to be higher the higher the economy grows.

The growing impact of the HIV/AIDS epidemic in African countries raises the importance of analyzing the health and growth relationship. Johnson et al. (2007) argue that extent of ill-health, internal conflict, and societal fractionalization constitutes the main constraints of growth in SSA countries. Gyimah-Brempong and Wilson (2004) find that both the stock of, and investment in, health human capital have positive and statistically significant effects on the growth rate of per capita income in both Sub-Saharan African.

² <http://blogs.worldbank.org/african/domestic-demand-net-exports-and-africa-s-growth>

Many authors have assessed the health status of a country by taking infant mortality as a proxy variable (e.g., Johnson et al., 2007, Duttagupta and Mlachila, 2008, Gyimah-Brempong and Wilson, 2004). However, the channel through which changes in income per se affect health status over the medium-term, including the mortality and morbidity in young children, remains controversial. Previous studies finding a strong causal relation running from income to health status were challenged by others arguing that the co-variation between income and health is likely to be driven primarily by omitted variables such as country-specific differences in institutional quality, female education, and the capacity to absorb medical technology (Baird et al., 2007). At the same time, it can plausibly be argued that long-term declines in infant mortality are driven mainly by improvements in medical technology and other policy variables.

Poverty reduction

Whether growth leads to poverty reduction is an important aspect of its quality. Kraay (2006) asserts that growth is pro-poor if the poverty measure of interest falls. He identifies three patterns of poverty-reducing growth: (i) a high growth rate of average incomes; (ii) a high sensitivity of poverty to growth in average incomes; and (iii) a poverty-reducing pattern of growth in relative incomes. In the medium- to long-run, most of the variation in changes in poverty can be attributed to growth in average incomes.

Dollar and Kraay (2002) demonstrate that growth is good for the poor. They document that average incomes of the poorest fifth of society rise proportionately with average incomes. That said, they note that there is relatively little empirical knowledge about the forces that drive the cross-country and inter-temporal variation in the share of income of the bottom quintile. Using different methods, both Sala-i-Martin and Pinkovskiy (2010) and Young (2009) find much stronger evidence that poverty reduction in Africa is associated with economic growth since 1995 than is generally assumed using official estimates.

D. Putting It All Together

This section has done an overview of the literature on how the quality of economic growth can affect socially desirable outcomes. It has explored the variables related to the sustained growth episodes and the relationship among economic growth and education, health and poverty. It also considered other aspects of the nature of growth, such as volatility of output, total factor productivity, sectoral and demand composition of output.

Volatility of real output is observed to be bad for growth and for consumption, since the uncertainty associated with short-run output variations can translate into lower investment and therefore economic growth. Moreover, volatility affects consumption as the lack of the liquidity (wealth or access to credit) of poor families does not allow them to smooth consumption variation over time. Low levels of productivity growth could constitute a disincentive to invest or lead to financial difficulties, which may hamper growth. Second, improved productivity can result from structural changes, i.e., allocation of factors to more productive activities, which contribute to a sustained growth path.

There is empirical evidence that sectoral composition of growth and the inward or outward

orientation of growth affect its quality. Several studies demonstrate that growth in certain sectors can be more poverty-reducing than in others and that in almost all high-growth episodes exports grew faster than GDP.

From the foregoing, it is logical to expect that growth that is strong, stable, sustainable, increases productivity, is broad-based and export-oriented is likely to be more efficient in fostering socially desirable outcomes. However, there is a dynamic and complementary relationship among education, health and growth. Empirical evidence confirms this two-way relationship between investment in education and health and growth for African economies. Considering the poverty-growth nexus, there is strong empirical evidence that growth is generally good for poverty reduction.

III. METHODOLOGY AND DATA

This paper aims at exploring the recent high growth episode in SSA countries in comparison to the pattern of growth of the 1980–94. To do this, we proceed in two steps. First, we undertake a descriptive analysis of the nature of the growth according to several dimensions: strength, volatility, productivity, sectoral composition and demand composition. Second, we analyze the evolution of social indicators such as education, health and poverty, and we correlate the changes of these indicators with GDP per capita growth at different time horizons. We also identify some interesting patterns for the best performers and present some stylized facts.

We analyze 43 SSA countries according to the analytical classification provide by the IMF *Regional Economic Outlook*.³ Considering 29 years, the data are generally averaged over 6 non overlapping periods: 1980–84; 1985–89; 1990–94; 1995–99; 2000–04; 2005–08 in order to smooth out short run fluctuations. Real GDP growth, real GDP per capita, and demand composition of output data were obtained from the IMF African Department Database. More details on data are in Annex I.

As pointed out by Oketch (2006), the collected data exhibits limitations, especially regarding population growth. Most of the social indicators data are from the World Banks and are based on household surveys. For many countries there are multiple missing data. Five-year averages were computed with the available data. Statistical estimates in Africa are still weak and the coverage rate and variable definitions are likely different among countries. The World Bank warns that, in spite of authoritative sources of data, they should be construed only as indicating trends (Oketch, 2006).

IV. THE NATURE OF SSA GROWTH

The growth path initiated in 1995 is characterized by a strong real GDP growth and real GDP growth per capita. It is less volatile. Moreover, is accompanied by more TFP improvement than before. Low- and middle-income countries exhibit more broad-based growth. There is

³ Equatorial Guinea is excluded because of the missing social indicators and the outlier growth path.

an overall shift over time from inward (1980–94) to outward-oriented growth (1995–2008). On average gross investment is playing an important role in explaining the growth path after 1995.

A. Strength of Growth

On average SSA countries have increased their average real GDP and real GDP per capita growth rate since 1995 (Figure 1). This pattern, however, is different depending on country analytical groupings. Middle-income countries' average growth, although still strong, declined somewhat during the period 1995–2008.

Low-income countries registered a lackluster real GDP growth rate from 1980 through 1994 with an average no higher than 2 percent per year. Since 1995, growth has improved tremendously to nearly 6 percent per year on average. This acceleration was also observed at per capita levels. Income per capita from 1980 through 1994 actually declined, with a growth rate of about -1 percent. From 1995 through 2008 it increased to a more promising 2.7 percent per year (Figure 2). Although fragile countries exhibit a promising positive real GDP growth rate since 1995, until 2004 their real GDP per capita growth was negative.

Figure 1. SSA: Real GDP Growth Rate, 1980–2008

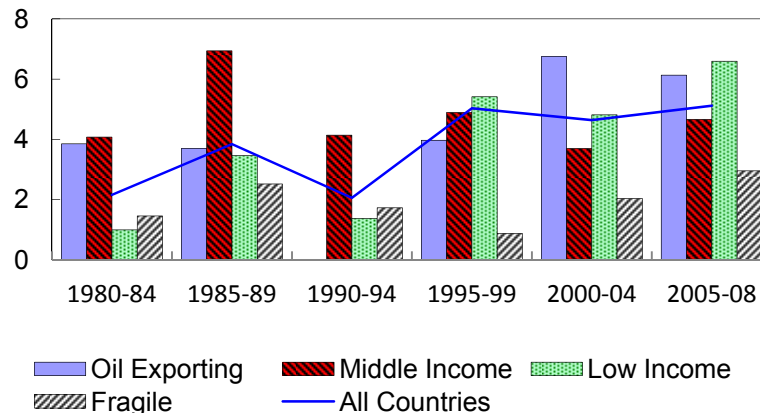
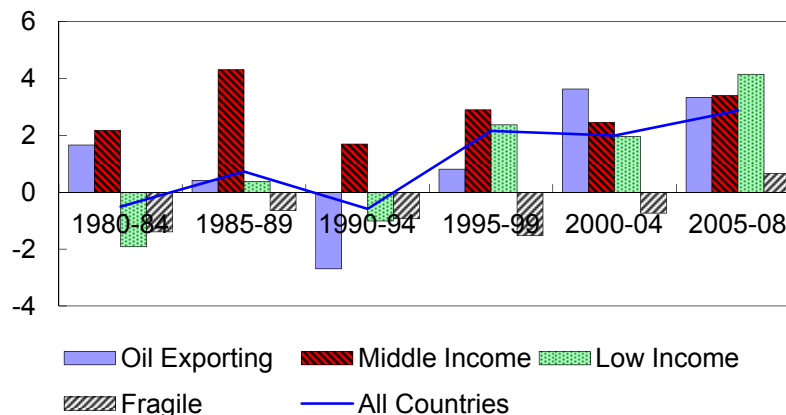


Figure 2. SSA: Real GDP Per Capita Growth Rates, 1980–2008



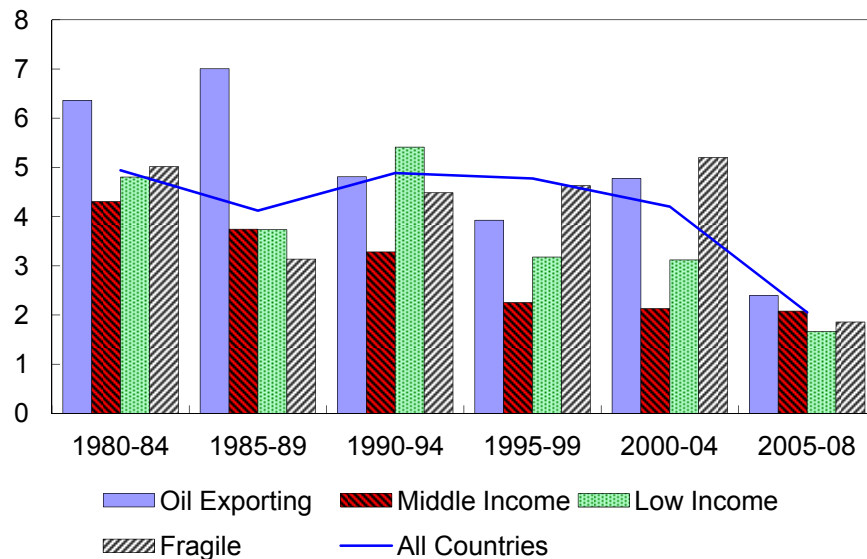
Source: Authors own calculation. IMF African Department Database

B. Volatility of Growth

There has been a general decline in volatility of growth during the high-growth episode. According to Figure 3 volatility—measured as the standard deviation of the real GDP growth rate over a 5-year period—has been declining since 1995. However, it was still fairly high for fragile countries until 2004. Middle-income countries record a consistent reduction in volatility even before 1995. Low-income countries exhibit also a negative trend since 1990–94. On average volatility remained unchanged until 1999. However, on average volatility in oil exporting countries decline in approximately 50 percent in 2005–08 compared to the previous period.

Some of the reasons of this decrease in volatility are highlighted in the IMF (2008). It is noted that most of the fast growers have achieved overall macroeconomic stability, stable and low inflation and debt sustainability, pursued sound economic policies and promoted institutional reforms. Aided by a favorable external environment, these countries also built up their external reserves.

Figure 3. SSA: Volatility of Real GDP Growth, 1980–2008



Source: Authors own calculation. IMF African Department Database

C. Total Factor Productivity

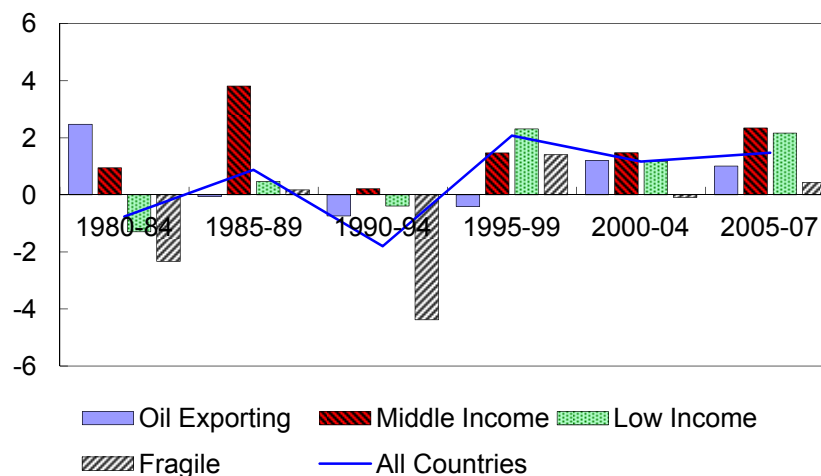
There has been a sharp turnaround in total factor productivity since the mid-nineties. Figure 4 reports the average annual change of the total factor productivity estimates from Arezki and Cherif (2010).⁴ Since 1995 all country groups have recorded TFP improvements, unlike

⁴ Arezki and Cherif (2010) calculate the TFP using a model of growing accounting for 88 countries from 1970 through 2007. They follow Caselli (2005) to construct a measure of the stock of physical capital, output, and the number of workers from version 6.1 of the Penn World Tables. To compute the stock of capital, K, at each point (continued...)

during the previous period. The turnaround in fragile countries is particularly remarkable given that they had negative TFP growth rate before 1995.

From 1980 through 1994 the average annual change of the TFP was a poor -0.5 percent. However, since 1995 there has been observed positive changes in the productivity in about 1.3 percent yearly. Berthélemy and Söderling (2001) explain that the sources of this improvement in the TFP are the reduction of the distortion of the foreign exchange market (black market premium), structural changes (e.g., move from agricultural to non-agricultural activities) and the increasing exports. Enisan Akinlo (2006) argues that policies that reduce population growth rate and debt, facilitate greater openness, sound macroeconomic fundamentals, price stability, financial deepening and greater private participation are linked to higher total factor productivity in SSA.

Figure 4. SSA: Average Annual Change in Total Factor Productivity, 1980–2007



Source: Estimates from Arezki and Cherif (2010)

D. Sectoral Composition of Output

On average in SSA the sectoral composition of growth since 1995 has become more broad-based. However, the aggregate result covers significant heterogeneity across different country groups. Figure 5 reports the contribution of the agriculture, the industry and service sectors to the total real GDP growth.⁵

In the period from 1980–84 the agricultural sector was the main driver of the growth on average for all countries in Africa, contributing about half of 2.2 percent of real GDP growth. The relative importance of industry and services has grown since 1995. On average from the

in time, they use the perpetual inventory equation. Following Hall and Jones (1999), they also compute a measure of “*h*” (human capital).

⁵ A finer sectoral breakdown (e.g., into 8-10 sectors) would be ideal. Due to lack of consistent data series this was not possible.

total of the 5.1 percent real GDP growth rate in 2005–08, services and industry explain more approximately 4.3 percent.

The importance of agriculture to the growth of middle-income countries has steadily declined over time. The contribution of services is increasing for the low-income countries. Fragile countries were entirely dependent on agriculture for the period 2000–04, but since then they has had a somewhat more broad-based growth pattern.

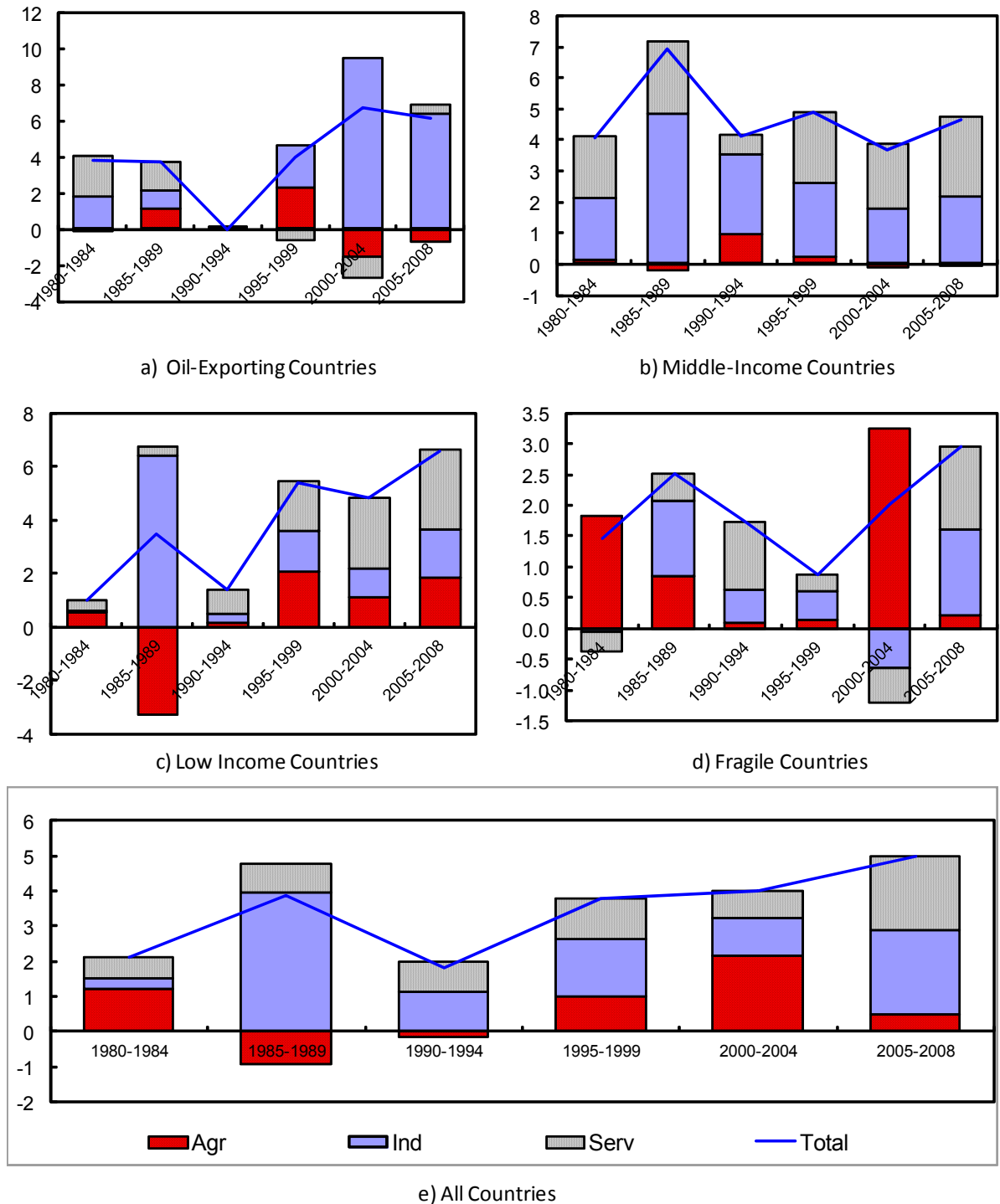
E. Composition of Output from the Demand Side

According to the Figure 6, since 1995 the relative importance of the net exports in explaining the growth evolution has broadly increased. Interestingly, although oil-exporting countries boomed around 1995, they do not exhibit export-led growth until the next period in 2000–04 since the peak was mainly driven by gross investment (which has been reducing since then). The role of net exports has been particularly important in low-income and fragile countries. Indeed, low-income countries' growth in 1995–1999 was driven almost exclusively by the net exports. Growth in middle income countries seems to be less export oriented than in the other groups of countries.

It is worth noting that outward-oriented growth has been accompanied by a decrease in the volatility for almost all groups of countries and a positive evolution of the TFP showed in Figure 4. The emergence of dynamic BRICs, notably China, has had a favorable impact on export growth and FDI in SSA. While a close examination of the inter-linkages among these trends is beyond the scope of this paper, there is ample evidence in the literature that outward orientation, especially if accompanied by diversification of the export base reduces volatility and induces an improvement in productivity (e.g., Malik and Temple, 2009 und van Biesebroeck, 2005).

Figure 5. SSA: Sectoral Composition of Real GDP Growth by Analytical Group of Countries, 1980–2008

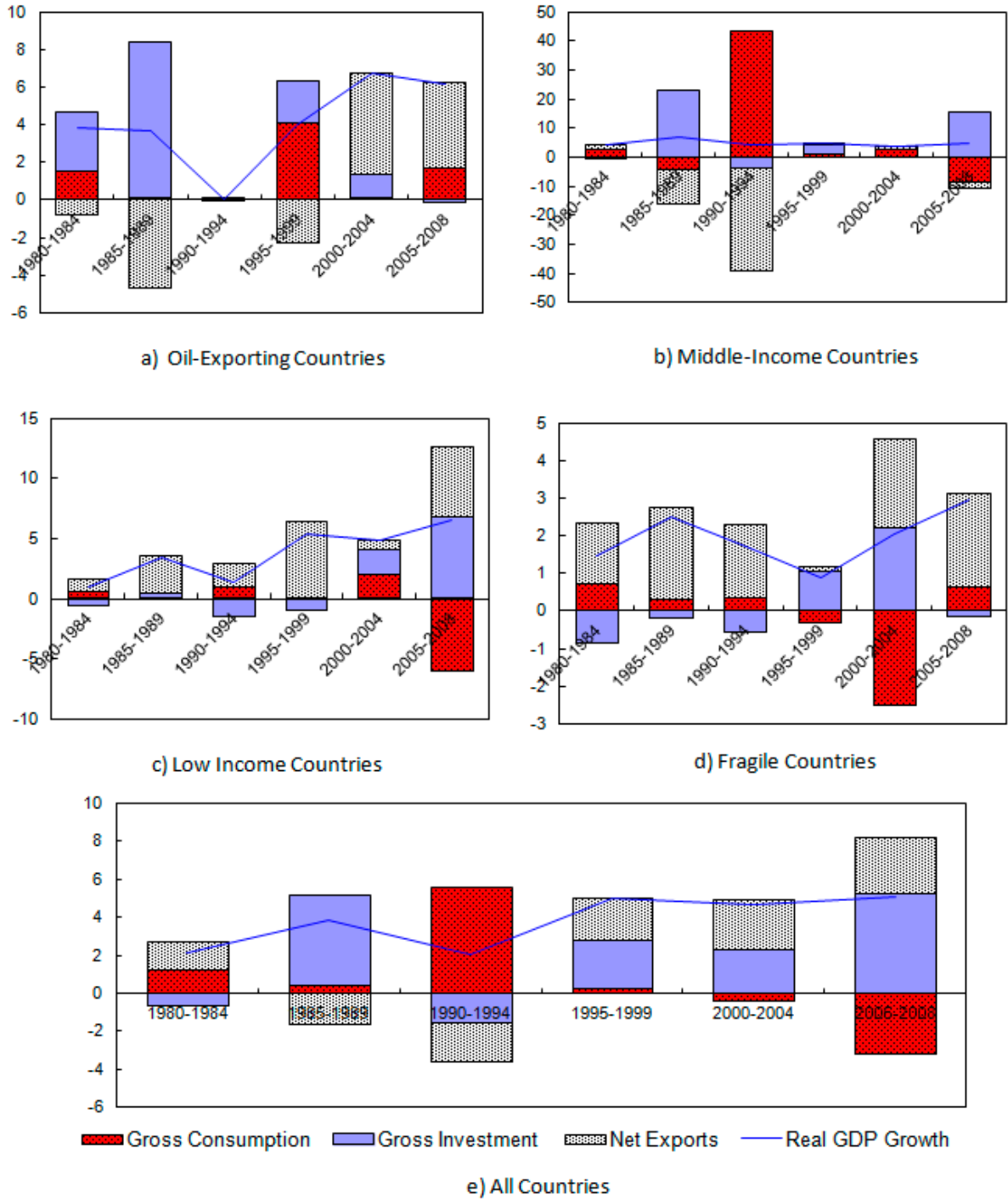
(in percent)



Source: IMF. African Department Database, August 2010

Figure 6. SSA: Demand Composition of Real GDP Growth by Analytical Group of Countries, 1980–2008

(in percent)



Source: IMF: African Department Database, August 2010. Authors own calculations

V. SOCIALLY DESIRABLE OUTCOMES

A. Overview

This section aims to investigate whether the improvement in growth has been accompanied by improvement of social indicators. In principle, the improvement of per capita growth should increase the resources available for social spending and increase incomes of the population. In practice, improvement in growth may not necessarily be accompanied by socially desirable outcomes for several reasons. First, while social spending may increase, the effectiveness may not be there due to institutional weaknesses. Second, a number of social indicators such as life expectancy and infant mortality are “slow-moving”, and are mainly driven by exogenous factors such as medical advances and external aid. Finally, increases in per capita income may not necessarily translate into poverty reduction, depending on income inequality and the source of the GDP growth (Kraay, 2006).⁶

The main findings of this section are as follows. First, improvements in real per capita income are associated with the reduction in infant mortality and school enrollment at the secondary level. However, link between the increase in the average per capita income and primary school enrollment and life expectancy is more tenuous. Second, the evolution of social indicators in low-income and fragile countries is more correlated with changes in the real GDP per capita. Finally, the biggest improvements are a result of post-conflict recoveries and/or relatively strong political will and institutional reforms.

Since the impact of growth on social indicators (except perhaps poverty) is likely to be considerably lagged (e.g., improving educational attainment requires additional infrastructure and training of teachers), we investigate a longer horizon of time. We average the social indicators and growth rates over periods of 15 years (1980–94 and 1995–2008) and then we analyze the relationship between the change in the social indicators and the improved real GDP per capita over time. Finally, we identify the high performers, which are countries with increasing change of GDP per capita and improving social indicators.

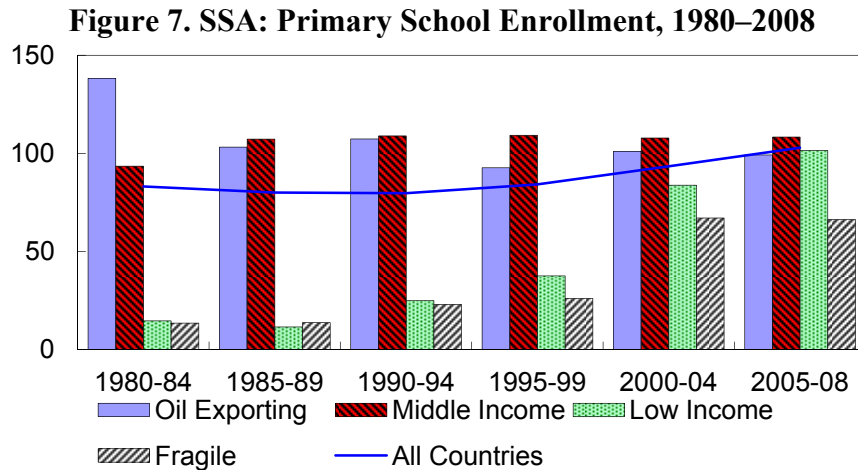
B. Preliminary Analysis

Primary school enrollment

Consistently over time, indicators of school enrollment have positively improved in low-income and fragile countries (Figure 7). Although oil exporting and middle-income countries have the highest level of school enrollment of the region, low-income and fragile countries are catching up very rapidly, albeit from a very low level.

⁶ Due to paucity of data, this paper does not explore the impact of growth on (unemployment). Some analysis of this issue is available in IMF (2012).

The first big improvement occurred during the period 1991–95 with an increase of the enrollment ratio of over 110 percent for low-income countries and 45 percent for fragile countries. The second big expansion took place in the period 2001–05.

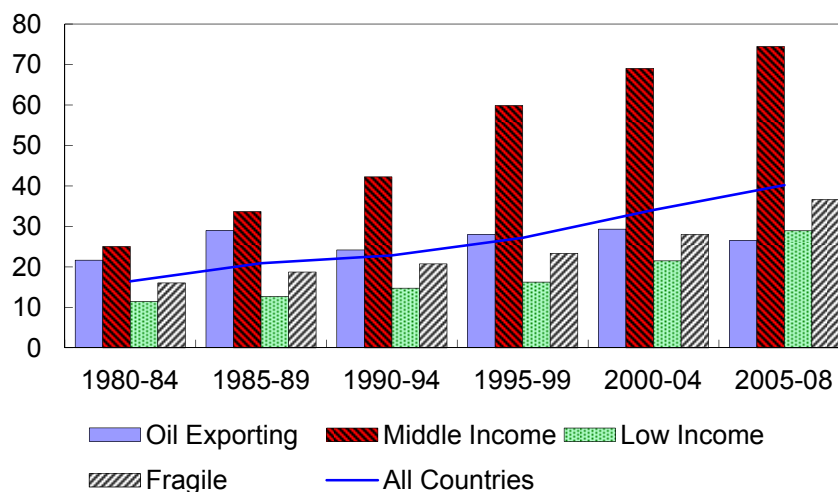


Source: Authors own calculation based on WDI 2010

Secondary School Enrollment

Since 1980 secondary school enrollment has increased from about 16 percent to 40 percent on average for all SSA countries, although there are large inequalities (Figure 8). Middle-income countries have recorded the most significant increases. Oil exporters have recorded almost no increases, while progress has been more steady for low-income and fragile countries.

Figure 8. SSA. Secondary School Enrollment, 1980–2008



Source: Authors own calculation based on WDI 2010

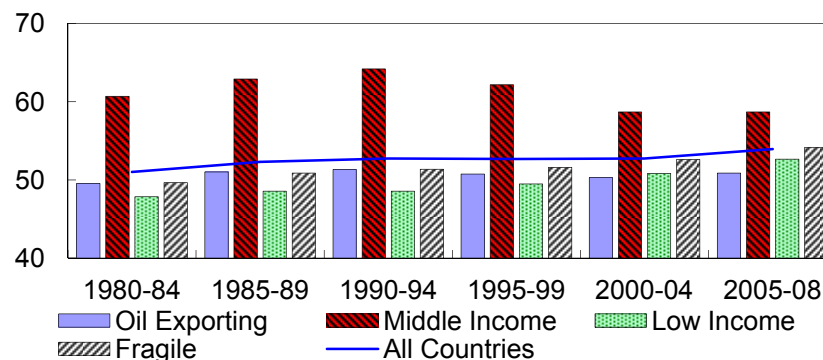
Life Expectancy

Life expectancy at birth in SSA has barely improved over the past 50 years. According to Soubbotina (2004), this is largely due to the ravages of HIV/AIDS especially in middle-income countries and the prevalence of other diseases such as malaria and tuberculosis.

For some countries, life expectancy has even declined from 1980 until the end of the 1990s (Figure 9). During the period from 1990–94 life expectancy in low-income countries fell almost 5 percent, in comparison to the previous period. Middle-income countries also recorded a 3 percent reduction during 1995–99 and even worse in 2000–2004, when a drop of almost 6 percent was observed.

There has been a turnaround during 2000–04. During 2005–08 the average life expectancy in SSA increased about 3 percent with respect to the previous period, especially in low-income countries.

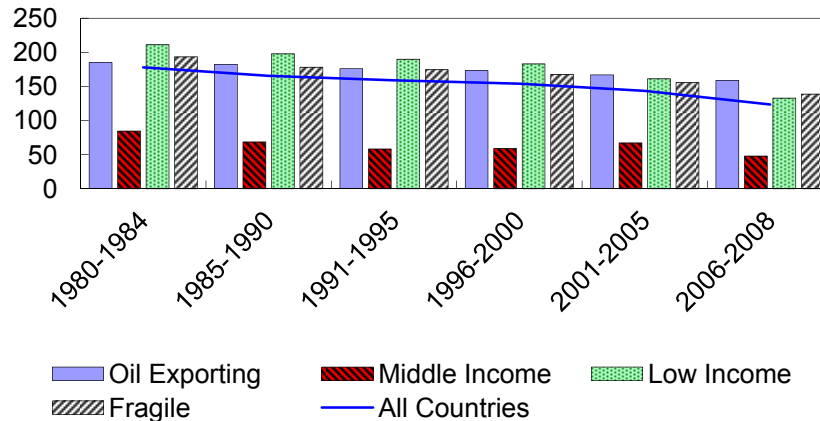
Figure 9. SSA: Life Expectancy at Birth 1980–2008



Source: Authors own calculation based on WDI 2010

Infant Mortality Rates

Infant mortality has been decreasing on average since 1980 in all SSA countries (Figure 10). The decline has been particularly remarkable in middle-income countries, and even low and fragile countries have shown improvement. The improvement seems to have somewhat accelerated since 1995.

Figure 10. SSA: Infant Mortality Rate, 1980-2008

Source: Authors own calculation based on WDI 2010

C. Poverty Reduction

Readily available poverty indicators—such as people living on a dollar a day or less—generally show modest improvements over the past fifteen years (see, for example, IMF, 2011). While there seem to have been significant improvements in oil-exporting and middle-income countries in this regard, progress seems apparently slow in low-income and fragile countries (Figure 11).

However, according to two very recent studies, the official statistics grossly underestimate the reduction in poverty, mainly as a result of poor, infrequent and inconsistent measurements.⁷ Using fairly sophisticated statistical methods, Sala-i-Martin and Pinkovskiy (2010) categorically state that “poverty in Africa is falling much faster than you think”.⁸ They estimate the income distributions for African countries, and compute African poverty rates and inequality and welfare indices for the period 1970–2006. They show that Africa is reducing poverty since 1995 progressively.⁹ Furthermore, African’s income distribution has become less rather than more unequal than it was in 1995 and therefore pro-poor.

⁷ As argued by Young (2010), for several of the poorest regions of the world the common data supporting existing estimates of living standards is minimal or, in fact, nonexistent. The quality and number of data that the WDI provides in terms of poverty gap and poverty headcount for SSA is poor. For our study this data is highly aggregated by analytical grouping and averaging by 5 years. For instance the data regarding to the oil exporting countries based almost completely on Nigeria reports. Cameroon registered this indicator just since 2001–2005. Middle income countries aggregates are based on data from Botswana, Lesotho, South Africa and Swaziland in different years.

⁸ They combine data from household surveys on the consumption shares accruing to different population groups with national income data.

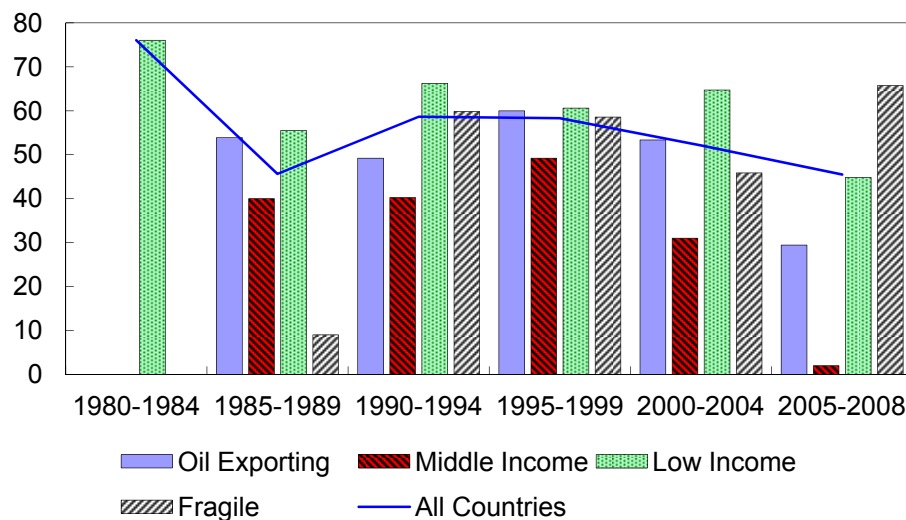
⁹ Their work is based on inter- and extrapolating the series of poverty and inequalities for African countries. They build the world income distribution by assuming that the distribution of income in each country and each year has the same functional form (log normal). They use the survey data to recover the functional form parameters, and from these parameters they compute any statistic of the distribution of income for any country or for all of Africa. Their estimates are based on GDP data from PWT 6.2, cubic splines interpolation between

(continued...)

Young (2009) estimates the poverty reduction in Africa by using and “recoding” 135 U.S. Government Demographic Health Survey (DHS) covering 56 developing countries, in order to construct estimates of the level, growth rate and inequality of real consumption in 29 sub-Saharan and 27 other developing countries. Unlike most studies, he innovates by employing direct physical measures of real consumption that minimize the technical demands of typical surveys. He finds that real household consumption in sub-Saharan Africa is actually growing around 3.3 percent per annum. This growth is not due to the influence of any particular product group, as durables, housing, health, and family economics all show growth which is at least double that reported in international sources. He found also decreasing levels of inequality, particularly outside of sub-Saharan Africa.

More recently, using a detailed analysis of household survey data, the IMF (2011) found that per capita growth does have a strong bearing on growth inclusiveness in SSA. In other words, where growth is strong, the poorest segment of the population typically witnesses positive real per capita consumption growth. The study also finds evidence of increased employment opportunities and poverty reduction in countries with high agricultural growth.

Figure 11. SSA: Poverty Headcount (US\$1/day)



Source: Authors own calculation based on WDI 2010

D. The Relation between per Capita Real GDP Growth and Social Indicators—a Reappraisal

In this sub-section we examine more formally the extent to which growth dynamics in SSA have been correlated with improvement in social indicators. To do this, we compute correlations between changes in the level of a particular social indicator and GDP per capita

available survey data, and extrapolation by horizontal projection. The recovered scale parameters are based on least squares minimization on quintiles.

growth.¹⁰ Table 1 reports the pair-wise correlations of the changes in percentage points of the social indicators analyzed in the last section (school enrollment ratio at the primary and secondary level, life expectancy and mortality rates) and the changes in the log of real GDP per capita (growth rate).

The results show that for the most part there is little correlation between growth and social indicators in general. Over the longer run, the only indicator that shows a statistically significant correlation for the entire sample is secondary school enrollment. At the analytical group level, there is a fairly strong and statistically significant correlation between life expectancy and growth in fragile states. Another fact that stands out is that in the earlier period under study (1984–89), there were significant correlations between growth and some social indicators, especially school enrollment.

While the overall results are rather disappointing *prima facie*, there are a number of plausible reasons why this is so, especially when one looks more closely at individual country outcomes.¹¹ There are two main reasons (apart from the poor quality of data). First, as indicated earlier, social indicators, especially life expectancy and mortality tend to move relatively slowly, while an epidemic like HIV/AIDS can set back progress very rapidly. Second, and perhaps more important, growth is but an ingredient in the dynamics. While in principle growth should increase the amount of available resources to undertake social programs, the success hinges crucially on a complex interaction of a number of institutional and policy factors.

While health outcomes in our study show low correlation with income, the link is far from uniform across analytical grouping. Indeed, several of low-income and fragile African countries exhibit better health outcomes compared to countries with much higher income levels. As mentioned by McCarthy (2001), it does not seem that health expenditure, either as percentage of GNP or per capita, is a particularly good predictor of health outcomes (not taking into account the endogeneity issue).

Life expectancy outcomes are more related with food availability per capita, literacy rate and a decrease in alcohol consumption for SSA than variation of income per capita. Health expenditures have shown strong negative relationship with life expectancy, which possibly arises from inefficient health services provision systems (Fayissa, 2008), as well as the HIV/AIDS epidemic.

Infant mortality indicators are likely to be more related with the mother's schooling, the mother's age at child's birth, the mother's vaccination, and access to infrastructure among others. According to Baird et al. (2007), the diffusion of cost-effective life saving

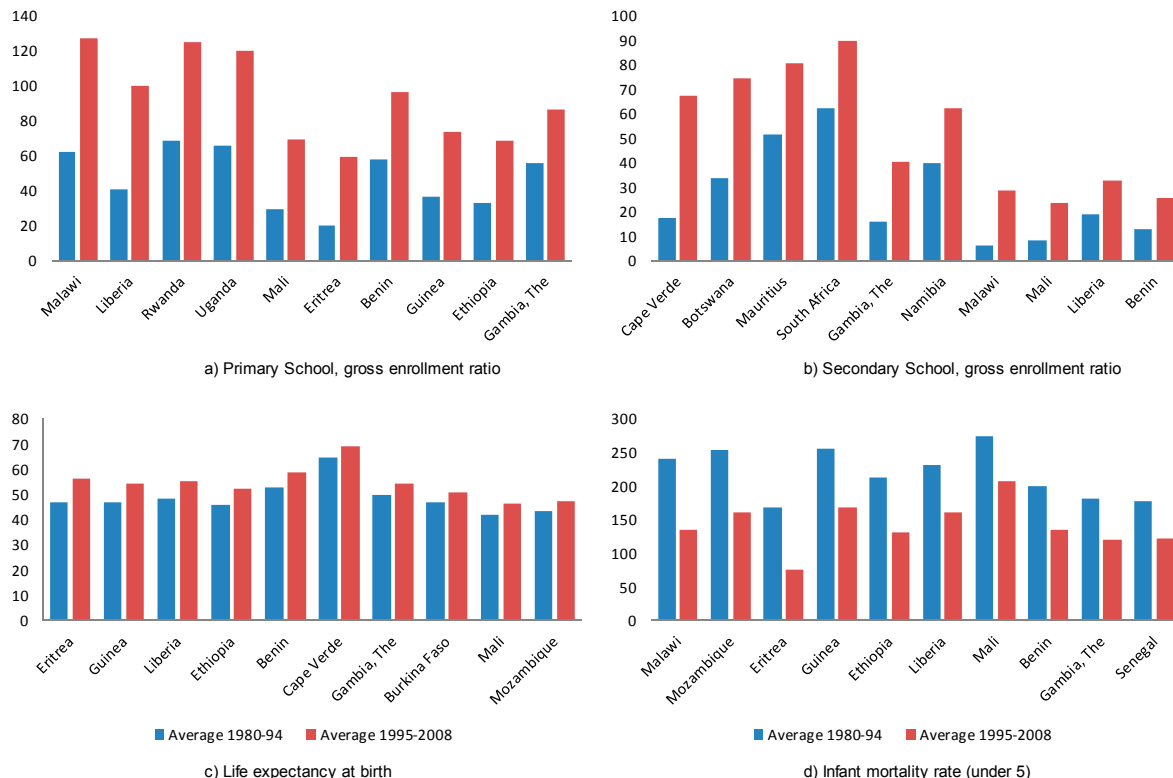
¹⁰ In order to control for the fact that countries starting from a very low level are likely to record high percentage increases in social indicators, we focus on absolute changes.

¹¹ In order to more formally test for the possibility of omitted variable bias, we estimated an equation of the type: $\Delta(\text{Social Indicator}) = \alpha + \beta \Delta \log(\text{real GDP per capita}) + \gamma(\text{Structural Variables}) + \varepsilon$. However, the results of the econometric estimation proved to be poor.

technologies has reduced infant mortality in much of the developing world. Income gains could also play a direct, protective role in ensuring child survival. They showed that there is a strong, negative association between changes in per capita GDP and infant mortality, and the implied elasticity of infant mortality with respect to per capita GDP is approximately -0.56.

In a recent assessment of progress towards Millennium Development Goals (MDGs), ODI (2010) noted that the most successful countries worldwide showed at least two important characteristics: (i) consistent leadership committed over an extended time period backed by strong implementation and human capacity; and (ii) long-term institutional reforms, especially those making the public sector more accountable to citizens. To illustrate these two points, Malawi offers an interesting case study. The big strides made in Malawi in halving infant mortality and improving school enrollment show the interaction between political will and a more favorable economic environment. The increase in primary school enrollment was the result of a deliberate government policy of universal primary education in the mid-nineties. Ultimately, additional resources had to be found to accommodate the large influx of students. The reduction in infant mortality is a result of more resources for the health sector and better education for mothers in the context of considerable improvements in agricultural productivity which in turn improved nutrition and of course overall growth. Figure 12 presents countries with the best performance in terms of improvement in social indicators.

Figure 12. SSA: Best Performers in Social Indicator Improvements, 1980–2008



Source: Authors own calculation based on WDI 2010 and IMF African Department Database

Table 1. SSA: Correlations of Real GDP per capita Growth and Change in Social Indicators

	Periods of five years respect to the previous period					15 years
	85-89	90-94	95-99	00-04	05-08	95-08
Full Sample						
School Enrollment, Primary	0.424*	0.139	0.319	-0.079	0.375*	0.002
School Enrollment, Secondary	0.487**	0.190	0.392*	0.063	0.161	0.380*
Life Expectancy	0.219	0.164	0.090	-0.250	0.077	-0.060
Mortality Rate (under 5)	-0.271	-0.044	-0.101	0.122	-0.176	-0.056
Low-income countries						
School Enrollment, Primary	0.578*	-0.447	0.547*	0.185	0.342	0.208
School Enrollment, Secondary	0.213	-0.014	0.344	-0.053	0.179	0.018
Life Expectancy	-0.169	0.366	0.225	-0.109	0.0721	0.142
Mortality Rate (under 5)	-0.532*	-0.131	-0.108	-0.152	-0.308	-0.136
Middle-income countries						
School Enrollment, Primary	-0.632	0.093	-0.416	0.238	-0.644	-0.087
School Enrollment, Secondary	0.916*	-0.223	-0.047	0.595	-0.577	0.510
Life Expectancy	0.092	-0.347	0.520	0.473	0.442	0.246
Mortality Rate (under 5)	-0.324	0.465	-0.415	-0.470	-0.480	-0.253
Oil Exporting Countries						
School Enrollment, Primary	0.618	0.161	0.161	0.870	-0.783	0.366
School Enrollment, Secondary	0.219	-0.737	0.0219	-0.0029	1.000*	-0.083
Life Expectancy	0.390	-0.530	-0.105	0.433	0.292	0.123
Mortality Rate (under 5)	-0.331	0.567	0.381	-0.323	-0.059	0.193
Fragile income countries						
School Enrollment, Primary	0.661*	0.536	0.264	0.100	0.725**	0.194
School Enrollment, Secondary	0.699*	0.327	0.549	0.571	0.482	0.401
Life Expectancy	0.013	-0.218	0.494	-0.492	0.257	0.606*
Mortality Rate (under 5)	0.014	-0.010	-0.499	0.326	-0.279	-0.485

*p<0.05, **p<0.001, ***p<0.001

Table reports the pair-wise correlation of the change in log of the 5 year average school enrollment (primary) and the change in log of the 5 year average real GDP per capita over 6 non-overlapping periods. The last column features the correlation between the changes in log of social indicator and real GDP growth rates respect to the previous 15 years average (1980–94 vs. 1995–2008).

Source: IMF African Department Database, August 2010 and World Bank Development Indicators, WDI 2010, and authors' calculations.

VI. CONCLUSION

This paper explored two inter-related questions: what the nature and pattern of the SSA growth episode of over the past 15 years has been and what impact this growth has had on social outcomes. To do this, the paper developed a definition of the quality of growth encompassing these two aspects. The main focus was the extensive statistical examination of various aspects of the fundamentals of growth in SSA, such as levels, volatility, sources, etc., according to various country analytical groupings. Second, we explored the extent to which the growth has been correlated by improvements in social indicators. Given considerable data limitations, the second strand of the work mainly involved meta-analysis, drawing on empirical findings in the literature.

Broadly speaking, the paper has shown that the quality of growth in SSA over the past 15 years has unambiguously improved. Specifically, the fundamentals of growth have all improved relative to the previous 15 years: growth is stronger, less volatile, accompanied by productivity improvements, more broad-based, and more export-oriented. While the measurement of the impact of growth on socially desirable outcomes was fraught with statistical and methodological difficulties, there are indications that most social indicators, especially poverty reduction are going in the right direction. This does not imply that progress has been phenomenal, and indeed some countries have regressed or only improved marginally.

Given that our work was relatively limited in scope, deeper analysis is needed to dig into the interrelations between various aspects of growth and their inter-linkages with socially desirable outcomes. A good starting point could be the development of a quality of growth index. A few ideas on this are explored in Annex II.¹²

¹² To be developed in a forthcoming working paper.

ANNEX I. DATA SOURCES

We follow the IMF's African Department *Regional Economic Outlook* classification of SSA countries as follows:

- *Oil exporting countries:* Angola, Cameroon, Chad, Congo, Republic of, Gabon, and Nigeria.
- *Middle income countries:* Botswana, Cape Verde, Lesotho, Mauritius, Namibia, Seychelles, South Africa, and Swaziland.
- *Low-income countries:* Benin, Burkina Faso, Ethiopia, Ghana, Kenya, Madagascar, Malawi, Mali, Mozambique, Niger, Rwanda, Senegal, Tanzania, Uganda, and Zambia.¹³
- *Fragile countries:* Burundi, Central African Rep., Comoros, Congo, Dem. Rep., Côte d'Ivoire, Eritrea, The Gambia, Guinea, Guinea-Bissau, Liberia, São Tomé & Príncipe, Sierra Leone, Togo, and Zimbabwe.

The shares in valued added of agriculture, industry and services used to study the sectoral composition of growth are available from the World Bank's *World Development Indicators* 2010 (WDI 2010).

Data on education, health and poverty are also available from the WDI 2010. The World Bank compiles data on education inputs, participation, efficiency, and outcomes. We use the enrollment at the primary and secondary school, which is defined as the ratio of total enrollment in primary or secondary (regardless of age) to the population of the age group that officially corresponds to that level of education.

Data on health are also provided by the WDI 2010. We consider the indicators of life expectancy and mortality rates for children less than five years. Life expectancy at birth indicates the number of years that a newborn infant would live if prevailing patterns of mortality at the time of its birth were to keep on the same way during her life. Under-five mortality rate is the probability per 1,000 that a newborn baby will die before reaching age five, if subject to current age-specific mortality rates.

¹³ Ghana, Senegal, and Zambia were reclassified to middle-income status in 2011.

ANNEX II. THE INDEX OF QUALITY OF GROWTH

In order to evaluate the quality of certain economic growth according to the elements we have considered in this chapter, a way to look at it is to build a Quality Growth Index (QGI) as follows:

$$QGI = \alpha_1(\text{"Growth Fundamentals"}) + \alpha_2 [\Delta (\text{Social Indicators})] \quad (1)$$

Where:

- Growth fundamentals = {strength, volatility, sectoral composition, outward orientation, TFP growth}
- Social indicators = {primary school enrollment, infant mortality, poverty prevalence}
- $\alpha_1 = \alpha_2 = 0.5$

Each component is classified as {0,1,2,3,4}= poor, low, moderate, high and very high.

For instance, per capita growth strength:

Poor	$g \leq 0$	→ 0
Low	$0 < g \leq 2$	→ 1
Moderate	$2 < g \leq 3$	→ 2
High	$3 < g \leq 4$	→ 3
Very high	$4 < g$	→ 4

For the case of sectoral composition of growth it is plausible to think in terms of a concentration index, where a broad-based composition is going to take the value of 4, and the most concentrated the value of 0 (poor).

The index itself could thus have a range of 0 (poor) to 4 (very high).

Given data limitations on social indicators, a partial QGI could also be computed based solely based on the growth fundamentals.

STATISTICAL APPENDIX

Table A1. SSA Best Performers: Primary School Gross Enrollment Rate, 1980–2008

	1980-94 Average	1995-2008 Average	Abs. Change in enrollment ratio
Malawi	62.25	126.88	64.63
Liberia	40.55	99.98	59.43
Rwanda	68.20	125.04	56.84
Uganda	65.40	119.98	54.58
Mali	29.60	69.13	39.53
Eritrea	20.15	59.35	39.20
Benin	57.53	96.42	38.90
Guinea	36.38	73.21	36.83
Ethiopia	33.15	68.63	35.48
Gambia, The	55.90	86.13	30.23

Source: Authors own calculation based on WDI 2010 and IMF African Department Database

Table A2. SSA Best Performers: Secondary School Gross Enrollment Rate, 1980–2008

	1980-94 Average	1995-2008 Average	Abs. Change in enrollment ratio
C. Verde	17.46	67.10	49.64
Botswana	33.78	74.67	40.90
Mauritius	51.73	80.40	28.68
South Africa	62.43	89.56	27.13
Gambia	15.85	40.38	24.53
Namibia	39.97	62.14	22.18
Malawi	6.20	28.37	22.17
Mali	8.08	23.38	15.30
Liberia	18.90	32.63	13.73
Benin	12.68	25.30	12.63

Source: Authors own calculation based on WDI 2010 and IMF African Department Database

Table A3. SSA Best Performers: Life Expectancy at Birth, 1980–2008

	1980-94 Average	1995-2008 Average	Abs. Change in enrollment ratio
Eritrea	46.65	56.30	9.65
Guinea	46.81	54.17	7.36
Liberia	48.25	55.07	6.82
Ethiopia	45.70	52.11	6.41
Benin	52.81	58.80	5.99
C. Verde	64.51	69.16	4.64
Gambia	49.83	54.26	4.44
Burkina Faso	46.67	50.82	4.15
Mali	42.09	46.18	4.09
Mozambique	43.27	47.32	4.05

Source: Authors own calculation based on WDI 2010 and IMF African Department Database

Table A4. SSA Best Performers: Infant Mortality Rate (under 5), 1980–2008

Country	1980-94 Average	1995-2008 Average	Abs. Change in enrollment ratio
Malawi	240.37	134.77	-105.60
Mozambique	252.87	160.30	-92.57
Eritrea	168.37	75.97	-92.40
Guinea	254.70	167.58	-87.12
Ethiopia	211.90	131.37	-80.53
Liberia	231.43	161.15	-70.28
Mali	273.50	207.15	-66.35
Benin	198.83	134.20	-64.63
Gambia, The	180.27	120.20	-60.07
Senegal	177.23	121.40	-55.83

Source: Authors own calculation based on WDI 2010 and IMF African Department Database

Table A5. SSA: Real GDP Growth by Analytical Grouping 1980–2008
(in Percent)

Country	1980-1984	1985-1989	1990-1994	1995-1999	2000-2004	2005-2008
All Countries	2.12	3.85	1.82	3.77	4.02	4.99
Oil Exporting	3.85	3.70	0.01	3.97	6.75	6.13
Middle Income	4.08	6.94	4.14	4.89	3.70	4.67
Low Income	0.99	3.46	1.37	5.41	4.81	6.60
Fragile	1.45	2.52	1.73	0.87	2.03	2.96

Source: IMF African Department Database, August 2010

Table A6. SSA: Real GDP per capita Growth by Analytical Grouping 1980–2008
(in Percent)

<i>Country</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>2000-2004</i>	<i>2005-2008</i>
All Countries	-0.46	0.84	-0.71	1.11	1.46	2.76
Oil Exporting	1.67	0.42	-2.69	0.81	3.63	3.34
Middle Income	2.18	4.31	1.70	2.90	2.46	3.41
Low Income	-1.92	0.38	-1.01	2.37	1.97	4.15
Fragile	-1.39	-0.64	-0.93	-1.53	-0.73	0.67

Source: IMF African Department Database, August 2010

Table A7. SSA: Real Output Volatility by Analytical Grouping, 1980–2008
(Measured as standard deviation of real per capita GDP growth rate)

<i>Country</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>2000-2004</i>	<i>2005-2008</i>
All Countries	5.02	4.07	4.64	3.53	3.82	1.91
Oil Exporting	6.36	7.00	4.81	3.93	4.78	2.39
Middle Income	4.31	3.75	3.29	2.26	2.14	2.08
Low Income	4.81	3.74	5.41	3.18	3.12	1.67
Fragile	5.02	3.14	4.49	4.63	5.20	1.86

Source: IMF African Department Database, August 2010

Table A8. SSA: Total Factor Productivity Average Annual Change by Analytical Grouping, 1980–2008

<i>Country</i>	<i>1980-1984</i>	<i>1985-1989</i>	<i>1990-1994</i>	<i>1995-1999</i>	<i>2000-2004</i>	<i>2005-2008</i>
All Countries	-0.73	0.97	-1.65	1.53	0.81	1.55
Oil Exporting	2.47	-0.06	-0.74	-0.41	1.20	1.01
Middle Income	0.95	3.82	0.22	1.47	1.47	2.35
Low Income	-1.30	0.47	-0.39	2.31	1.18	2.17
Fragile	-2.33	0.18	-4.38	1.41	-0.09	0.44

Source: Arezki and Cherif (2010).

Table A9. SSA: Sectoral Composition of Real GDP Growth, 1980–2008

<i>Period</i>	<i>Agriculture</i>	<i>Industry</i>	<i>Services</i>	<i>Total</i>
1980-1984	1.25	0.31	0.60	2.16
1985-1989	-0.89	3.80	0.78	3.84
1990-1994	-0.19	1.28	0.97	2.06
1995-1999	1.35	2.18	1.50	5.03
2000-2004	2.49	1.25	0.90	4.64
2005-2008	0.49	2.48	2.14	5.12

Source: IMF African Department Database, August 2010

Table A10. SSA: Demand contribution to Real GDP Growth 1980–2008

	<i>Gross Consumption</i>	<i>Gross Investment</i>	<i>Net Exports</i>	<i>Total Real GDP Growth</i>
1980-1984	1.27	-0.59	1.48	2.16
1985-1989	0.46	4.71	-1.59	3.84
1990-1994	5.64	-1.53	-2.06	2.06
1995-1999	0.29	2.54	2.20	5.03
2000-2004	-0.33	2.30	2.67	4.64
2005-2008	-3.15	5.28	2.98	5.12

Source: IMF African Department Database, August 2010

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