

The Impact of IMF Economic Policies on Poverty Reduction in Low-Income Countries

(I M F 支援経済政策が低所得国の貧困削減に及ぼす効果の分析)

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Abstract

Over the last two decades, reducing poverty in low-income countries has been one of the important challenges for the world. Since the 1980s, the International Monetary Fund (IMF) began to tackle the poverty issue by providing highly concessional lending to these countries. In the early 1990s, it progressively integrated social spending needs into its adjustment programs. In 1996, the IMF and the World Bank introduced a Highly Indebted Poor Country (HIPC) Initiative to provide for official debt relief. Nevertheless, a world-wide prevalence of poverty in low-income developing countries have led to strong criticisms of international financial institutions, including the IMF. In response, the IMF introduced the Poverty Reduction and Growth Facility (PRGF) in 1999 to integrate the objectives of poverty reduction and growth more fully into its operations for low-income countries. This paper attempts to explore the issue of what factors have affected the level of poverty and whether IMF-supported programs have contributed to poverty reduction in low-income countries. It then identifies the areas of weakness of IMF-supported programs and attempts to provide the policy implications of their program designs.

1. Introduction

Over the last two decades, reducing poverty in low-income countries has been one of the important challenges for the world. Despite that unprecedented progress has been made in terms of global living standards, nearly half of the world's 6 billion people still live on less than \$2 a day, while one-fifth live on less than \$1 a day without basic human needs, such as education, health care and access to safe drinking water. Life expectancy too is still much shorter than that achieved by the industrial countries.

In the 1980s, various international financial organizations began to tackle the poverty issue by providing highly concessional lending to these countries. The International Monetary Fund (IMF) was no exception: it introduced the low-interest structural adjustment facility (SAF) in 1986, followed by the enhanced structural adjustment facility (ESAF) in 1987. Since 1990, moreover, the United Nations Development Program (UNDP) began to publish Human Development Reports and compiled the Human Development and Human Poverty Indices. Since the 1990s, the World Bank has also adopted specific targets for poverty reduction focusing on primary education, gender inequality, mortality, diseases, and environment sustainability; now known as the Millennium Development Goals (World Bank, 2002). In 1996, the Development Assistance Committee of the Organization for Economic Co-operation and Development (OECD) released a new development strategy with seven specific development targets to be pursued by 2015.

Furthermore, since the early 1990s the IMF progressively integrated social spending needs into its ESAF-programs by increasing public spending on education, health care, and social safety nets with a view to mitigating the adverse effects of IMF-supported programs for the poor (IMF 1999a; Inchauste 2002). This approach, endorsed by the IMF Executive Board in 1993, led to the issuance of guidelines in 1997 for monitoring social expenditures and social indicators under the ESAF arrangement. In 1996, in addition, the IMF and the World Bank introduced a Highly Indebted Poor Country (HIPC) Initiative to provide for official debt relief.

Nevertheless, pro-longed sluggish economic growth and a world-wide prevalence of poverty in low-income developing countries have led to strong criticisms of international financial institutions, including the IMF, with regards to their adjustment programs. Some have claimed that ESAF-supported programs have failed to meet even their own objectives, namely economic growth and external viability. Moreover, ESAF-supported programs have been criticized as prioritizing short-run stabilization (i.e. fiscal and monetary tightening) over poverty reduction and achieving fiscal restraint, by squeezing education and health care spending (IMF 1999b).

The growing criticisms finally persuaded the IMF to undertake an internal staff review of the ESAF in 1997 (IMF 1997), followed by an external evaluation in 1998 (IMF 1998). These reviews concluded that more should be done to ensure that macroeconomic, structural, and social policies complement each other and that ESAF-supported programs aim to accelerate growth and shift the composition of fiscal expenditure in favor of health care, education and basic infrastructure. In

response to these recommendations, the IMF replaced ESAF with the Poverty Reduction and Growth Facility (PRGF) in 1999 to integrate the objectives of poverty reduction and growth more fully into its operations for low-income countries, and to base these operations on national poverty reduction strategies prepared by the country (IMF 2000 and 2001). While PRGF-supported programs still focus on prudent macroeconomic policies and structural reforms (e.g., exchange rate policy, tax policy, fiscal management, privatization, civil service reforms, domestic price reforms), they now include a poverty and social impact analysis (PSIA) of the policies adopted, which has enabled countries to weigh the trade-offs arising from the implementation of the policies and thus take countervailing measures to mitigate adverse impacts. These programs also more flexibly accommodate rising budget deficits, and place more emphasis on an increase in budgetary resources for poverty-reduction purposes.

While it is still too early to make a comprehensive assessment, the internal staff review (IMF 2002a, 2000b, 2000c, and 2000d) concludes that the PRGF-adopted countries do now allocate more resources to education, health care, and capital expenditure as measured in terms of gross domestic product (GDP) and total government spending. However, the review concluded that the PSIA should be performed more systematically, and that the quality and efficiency of government spending should be improved. In addition, Inchauste (2002), an IMF staff member, reviewed the PSIA and concluded that there is room for improving program designs and implementation of countervailing measures used to offset potential negative impacts.

This paper attempts to explore the issue of what factors have affected the level of poverty and whether IMF-supported programs have contributed to poverty reduction. Since poverty problems are more serious and complex in low-income countries than in medium-income ones, this paper focuses on 77 low-income countries (defined as those eligible for PRGF assistance, based on a 2001 per capita gross national income of \$875) rather than extending to broader ranges of developing countries as done in many previous studies.ⁱⁱ Since income measures of poverty are not available for many low-income countries, this paper uses nonincome poverty measures, typically education and health indicators. It then identifies the areas of weakness of IMF-supported programs and attempts to provide the policy implications of their program designs.

2. Stylized Facts: Trends in Macroeconomic and Poverty

This section examines various economic indicators including macroeconomic performance, poverty status, and political/social risk environments during the past two decades (Table 1). It also compares the economic conditions of the countries adopting IMF-supported programs (hereafter called “program” countries) with those without such programs (“nonprogram” countries) to obtain some idea of the impact of the IMF on countries’ economic policies. While the IMF generally offers various facilities, such as ESAF (now PRGF), Extended Fund Facility, and Stand-By Arrangements, low-income countries mostly adopt ESAF (PRGF) programs. Thus, this paper does not distinguish program countries by type.

Almost all economic data here were obtained from the World Bank's World Development Indicators (WDI) database. Other data are as reported below.

Macroeconomic Indicators

Low-income countries experienced little per capita economic growth during 1981-2000, since the rate of real gross domestic product (GDP) growth barely exceeded, or indeed even fell below, the rate of population growth. In particular, the period of 1991-1995 was the most difficult of the past two decades, as evidenced by declining levels of per capita real GDP, higher rates of inflation, and greater current account deficits as a share of GDP. However, macroeconomic situations improved in the second half of the 1990s, thanks to higher economic growth.

Between program and nonprogram countries, the overall macroeconomic performances of the former have fallen below those of the latter. Compared to nonprogram countries, program countries have achieved a lower level of real GDP per capita (both in terms of US dollars and purchasing power parity [PPP]), accumulated larger external debt as a share of GDP, borne a heavier debt service burden relative to exports, held fewer months of foreign reserves, and adopted a lower pace of trade openness (measured by the sum of exports and imports as a share of GDP). Another feature of program countries is their heavy dependence on official development aid (ODA). For example, program countries have received greater absolute amounts of ODA during 1981-2000. In addition, their governments have depended more heavily on aid (measured by the ratio of ODA to government expenditure) to finance fiscal deficits during 1986-2000 than have nonprogram countries.

On the other hand, program countries have achieved a lower rate of inflation than nonprogram countries during the past two decades. Also, their current account position has been more favorable in the past two decades except for in 1986-1990. Moreover, according to time-series data, program countries have steadily improved their foreign reserve and fiscal deficit positions, and shrunk the size of government (measured by the ratio of government consumption expenditure to gross domestic income [GDI]) during 1981-2000. By contrast, such time-series improvements were not necessarily present for nonprogram countries. These results imply that countries under the IMF-supported programs have placed greater emphasis on containing inflation, improving the balance of payment positions, and restoring the fiscal balance over other important economic policies (such as improving per capita economic growth, promoting trade liberalization, etc.)

Various Risk and Democracy Indicators

To measure a country's overall political/social risk environment, its ability to pay external debt, and its overall macroeconomic performance, this paper uses the following three types of international country risk ratings developed by the Political Risk Services Group, a US-based international business report publisher: political risk (ranging from 0 or highest risk to 100 points or lowest risk), and financial and economic risk (both ranging from 0 or highest risk to 50 points or lowest risk) indices. The political risk index assesses the political/social stability of a country by taking into account government stability, socioeconomic conditions, conflict,

corruption, military in politics, religious or ethnic tensions, law and order, bureaucracy quality, etc. The financial risk index measures a country's ability to pay by considering foreign debt, debt services, foreign reserves, and exchange rate stability. The economic risk index assesses a country's overall current economic strengths by covering data on GDP per capita, real GDP growth, inflation, budget balance, and current account balance. The greater these indices are, the lower the risks are.

Table 1 presents that the political, financial, economic risk indices, and corruption index (one of the indices comprising the political risk index) increased steadily among all sample countries during 1981-2000, suggesting that these risks declined. In particular, program countries have steadily improved these four indices in this period (except for financial risk during 1986-1990), while such a steady improvement has not been observed for nonprogram countries. In general, the IMF's role in improving the political risk rating is minimal owing to its let-alone policy over individual countries' politics and conflicts. On the other hand, its impact on the financial and economic risk ratings could be potentially large owing to its ability to influence countries' financial payment conditions and macroeconomic performance. Thus, the continuous improvement of the financial and economic risk indices in program countries could be attributable in part to their access to IMF loans and their resultant acceptance of IMF-supported programs.

Other structural measures used in this paper are the political rights and civil liberties indices (both ranging from 1 or highest freedom to 7 or lowest freedom) compiled by Freedom House, a non-profit organization located in the United States. The political rights index measures the degree that individuals' participate freely in the political process including the right of all adults to vote and compete for public office, and for elected representatives to have a decisive vote on public policies. The civil liberties index assesses the degree of freedoms to express views and establish organizations as well as the degree that the rule of law and human rights are maintained. The lower these indices are, the better the democracy conditions are. Compared to 1981-1995, both program and nonprogram countries lowered their political rights and civil liberties indices, improving their democracy status. However, the degree of success was greater in nonprogram countries than program countries, especially in 1986-1990 and 1996-2000, contrary to the trends obtained from the above four risk indices.

Income Poverty and Nonincome Poverty

The World Bank Annual Report 2002 describes that in the past two decades the number of people living in abject poverty (defined as living on less than \$1 a day) has fallen, by perhaps 200 million people - after rising through most of the 19th and 20th centuries. The percentage of the world's population living on less than \$1 per day fell from 29 percent in 1990 to 23 percent in 1999. While these figures indicate that world poverty has been declining, a detailed analysis reveals that these improvements arose largely in medium-income countries in the East Asia and Pacific region, notably China. Indeed, a number of low-income developing countries, especially in Africa and Central Asia, have not shown any improvements in their per capita income or social conditions. Thus, the issues of poverty reduction could be more properly dealt with if the target countries were to

be narrowed down to low-income countries rather than covering broader ranges of developing countries, to which many Asian countries belong.

One difficulty in focusing solely on low-income countries, however, is that income measures for poverty are rarely available due to the lack of regular household surveys.ⁱⁱⁱ Thus, studies have generally used various nonincome measures as alternatives to income related measures of poverty. This practice is justifiable, since human development indicators have proven to be significantly correlated with average income (Anand, 1991; Anand and Ravallion, 1993; and Moser and Ichida, 2001). Recently, nonincome measures have also been increasingly recognized as being a better definition of poverty, since they tend to capture a broader picture of living standards and human development, than a mere income measure of poverty. For instance, the World Development Report 2000/2001 prepared by the World Bank defines poverty not as just material deprivation (measured by income and consumption), but also as low achievements in education and health. The adoption of a broader definition of poverty also promotes our understanding of the causes of poverty, thereby helping the design of better-targeted policies. Moreover, Stewart (1998) distinguishes outcomes (well-being measured by life expectancy, educational achievements, etc.) and inputs (access to the resources needed to produce desired outcomes, typically measured by incomes, transfers, etc.). Although inputs are more immediately affected by various policies, Stewart points out that what ultimately matters are outcomes from a welfare perspective, which justifies the use of nonincome measures.

Adopting an alternative definition of poverty, Moser and Ichida (2001) have used life expectancy from birth, infant mortality rates, and the gross primary school enrollment ratios in Sub-Saharan Africa. In addition to these indicators, Lopes (2002) used low-birth weight, hospital beds, youth/adult illiteracy rates, pupil-teacher ratios, and female secondary enrollment ratios in the same region. In line with their approaches, this paper uses two types of nonincome measures of poverty as proxies for income ones. Five indicators related to education (adult illiteracy rate, youth illiteracy rate, primary school pupil-teacher ratio, primary school enrollment ratio, and primary school enrollment ratio for females) and another six indicators related to health (life expectancy at birth, infant mortality rate, mortality rate for children under five, the number of physicians per 1,000, DPT immunization ratio, and measles immunization ratio) are used. The primary school enrollment for females is adopted based on the growing awareness that gender relations constitute part of the broader issue of poverty reduction. The World Development Report 2000/2001 supports this view by stressing that greater gender equity is desirable in its own right and for its instrumental social and economic benefits for poverty reduction. The selection of 11 indicators is made based on the availability of sufficient time-series data. The combined education and health indicators are referred to as “social indicators” or “social outcomes”.^{iv}

In the definitions of the education indicators, an adult illiteracy rate refers to the percentage of people aged 15 and above who cannot, with understanding, read and write a short, simple statement on their everyday life. A youth illiteracy rate refers to the percentage of people aged 15-24 who cannot, with understanding,

read and write a short, simple statement on their everyday life. A primary school pupil-teacher ratio is defined as the number of pupils enrolled in primary schools divided by the number of primary school teachers (regardless of their teaching assignment). A primary school (gross) enrollment ratio indicates the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to primary education (which provides children with basic reading, writing, and mathematics skills along with an elementary understanding of such subjects as history, geography, natural science, social science, art, and music.)

Chart 1 illustrates that all five education indicators have improved during 1980-2000, achieving lower youth and adult illiteracy rates, higher primary school enrollment ratios for total and females, and a lower pupil-teacher ratio (during 1995-1996.) In particular, the youth and adult illiteracy rates have made remarkable progress. By contrast, the pupil-teacher ratio and two measures of school enrollment ratios have been more or less constant. Between program and nonprogram countries, the overall human development conditions of the latter exceeded those of the former from the 1980s to the first half of the 1990s. However, program countries showed a constant improvement in all education indicators over the two decades, while such a trend was not seen in nonprogram countries with respect to the pupil-teacher ratio and two measures of school enrollment ratios.

Chart 2 sets out the education indicators classified by region. Two African regions (CFA franc zone and other African countries) have underperformed Latin America and other region (including Asia and Middle East) with respect to education indicators. Africa's poor education outcomes are consistent with its prolonged persistence of poverty and low economic growth. Various studies have pointed out that the size of government, a low level of investment, political instability, underdeveloped financial markets, lack of infrastructure, ethnic diversity, dependence on primary export products, and a closed trade policy have contributed to a low level of economic growth (Barro and Lee, 1993; Easterly and Levine, 1997; Sachs and Warner, 1997). Moreover, the performance of CFA franc zone was inferior to that of other African region with respect to all education indicators in part due to the lack of a flexible monetary policy and resultant lower economic growth under the fixed exchange rate regime.

In the definitions of health indicators, life expectancy at birth is measured by years. Mortality rates for infants and children under five are measured per 1000 live births. A physician ratio refers to the number of doctors per 1000 people. Measles and DPT immunization ratios refer to the rate of vaccination coverage of children under one year of age. Chart 3 indicates that two immunization ratios and two mortality rates have reported more or less steady improvement trends throughout 1980-2000. Like education indicators, health conditions in program countries were inferior to those in nonprogram countries in the 1980s. However, these differences have shrunk in recent years. In particular, the physician indicator of program countries has exceeded that of nonprogram countries since the middle of the 1990s. In regard to regional differences, Chart 4 shows that health indicators in two African regions have underperformed those in other regions—an outcome similar to that of the education indicators.

Social Expenditure Indicators

Public social expenditure is one of the most readily available policy instruments for provision of social services (Tanzi et al. 1999). Government expenditures for education and health care can be measured in terms of GDP, total expenditure, and per capita US dollars. Public educational expenditure consists of spending on public education plus subsidies to the private education sector. Public health care expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds.

Table 1 reports that expenditures on education and health care (in terms of per capita GDP US dollars) in program countries have remained far below those in nonprogram countries, suggesting the need for a further improvement in program design. Moreover, while program countries have increased the ratios of public expenditure on education and health care to total public expenditure in the 1990s, public educational expenditures measured in terms of GDP and per capita US dollars have declined during 1996-2000 and health expenditures measured in terms of per capita US dollars have declined in the period 1991-1995. These results indicate that social expenditures in program countries have been insufficient, not only relative to nonprogram countries, but also in terms of their absolute size.

3. Literature review

As main factors affecting poverty, the World Bank (2001) points out a lack of income and assets, powerlessness of institutions of state and society, and vulnerability to adverse shocks linked to an inability to cope with them. A lack of income and assets is closely associated with per capita income and economic growth. Powerlessness of institutions of state can be reflected in the government policy on social expenditures and the level of corruption, while that of society is embedded in the overall political/social stability. Vulnerability to adverse shocks is also linked with various macroeconomic and political risk variables. This section provides a review of the literature focusing on these determinants of poverty.

Economic Growth and Poverty

Sustained economic growth is regarded as the most important determinant of poverty reduction. Without it, poor people's prospects for greater opportunity, empowerment, and security—essential elements of the strategy for poverty reduction—will be harder to realize (World Bank, 2002). Economic growth can improve human capital and health attainments through its ability to reduce income measures of poverty. For this reason, various studies often estimate the growth elasticity of poverty reduction, or the rate at which growth translates into lower poverty (although it is known that this elasticity also depends on the initial level of income inequality). Deininger and Squire (1996) have reported that GDP per capita increased by 26 percent in developing countries between 1985 and 1995, while the world's Gini Coefficients changed only 0.28 percentage points per year over the same period. Thus, since income inequality tends to remain stable over time, they claim that economic growth may help reduce poverty and that the extent

of poverty reduction depends on the rate of economic growth. Furthermore, as poverty tends to be shallow in the sense that many people are clustered right below the poverty line, they point out that even a modest rate of economic growth has the effect of lifting people out of poverty. In other words, the poor can use economic growth to work themselves out of poverty.

Using the international poverty level of \$1 per person per day, Squire (1993) has shown a 1% increase in the growth rate reduced the poverty headcount (population below poverty line) by 0.24 percentage points. Based on the data of 50 low-income and lower middle-income countries for 1980-1999, Adams (2003) has found that headcount, poverty gap (the mean distance below the poverty line as a proportion of the poverty line), and squared poverty gap decline when growth measured by the survey mean increases, while far fewer of the poverty coefficients are significant when growth is measured by GDP per capita. This suggests that when growth is measured by the survey mean, economic growth does reduce poverty with the point estimate for growth elasticity of the headcount ratio being -5.745 . By excluding Europe and Central Asia, which create many intervals, the point estimate for the headcount ratio declines to -2.592 —the figure closer to -2.12 derived by Bruno et al (1998) and -3.12 by Ravallion and Chen (1997).

Moreover, Adams' findings on the less clear statistical relationship between growth measured by GDP per capita and poverty are consistent with the results derived by Roemer and Gugerty (1997) and Ghura et al (2002). While Dollar and Kraay (2001) have reported that a unitary elasticity of growth in per capita GDP to growth in the income of the bottom quintile of the income distribution, the previous two studies showed that the relation between poverty and income might not be as robust as Dollar and Kraay state.

With regards to causality between growth and poverty, Deaton (2001) has stressed a direction running from income to health outcomes based on a household-level study in the United States, rejecting reverse causality. Case (2000) also established a causal relationship from income to health outcomes in a household-level study of pensioners in South Africa. As for education indicators, Ranis et al (2000) reported the possibility of a two-way channel between education measures and economic growth. In a channel from education outcomes to economic growth, human capital development increases labor productivity and then economic growth. On the other hand, in a reverse channel, economic growth increases family and government resources that can be applied to improving human capital development. Meanwhile, Duffy and Papageorgiou (2000) have underscored the role of physical capital accumulation, not human capital development, in the economic growth equation for low-income countries. These results suggest that the causality runs from income to education indicators in low-income countries, as do health indicators. Funke and Stulik (2000) found a similar result for low-income countries. After considering these studies, Moser and Ichida (2001) stressed the channel from income to poverty dominates in low-income countries.

Other Macroeconomic Policy Variables and Poverty

Using income measures of poverty, Stewart (1998) stated that tight fiscal and monetary policies tend to exert unambiguously negative effects on income

measures of poverty through cuts in government expenditure, rises in taxation, and reductions in real wages and credit restraint. Since most of these negative efforts prevail in the first instance in the formal sector of urban areas, demand restraint is likely to raise urban poverty through lowering output and employment. On the other hand, a decline in inflation as a result of demand restraint policies may help the poor since they typically pay most of the inflation tax in the absence of possessing tools to accumulate wealth and diversify its composition. Moreover, the positive outcomes arising from demand restraint policies may prevail in the long run if supply-side policies are adopted together. Based on these arguments, Stewart states that demand-reducing policies are likely to increase poverty in the short run, while possibly lowering poverty in the long run.

With respect to the exchange rate policy, devaluation is likely to increase returns to the labor (wage incomes) and thus employment if the tradable sector produces relatively labor-intensive commodities (Stewart, 1998). Obviously, an opposite result prevails if capital-intensive products are produced in the tradable sector. As for the impact of trade liberalization on poverty, it reduces poverty if liberalization promotes economic growth.

After reviewing the literature on the various impacts of macroeconomic policies, Stewart summarized that the impact of macroeconomic adjustment programs on poverty would be positive as long as they could raise economic growth. These results are also supported by Dollar and Kraay (2001) and Roemer and Gugerty (1997). Moreover, Epaulard (2003) supplements these findings by showing that very high levels of inflation (above 80%) are associated with a higher elasticity of the poverty rate with respect to economic downturn relative to economic booms; but at lower levels, no significant relationship was found between inflation and the elasticity of poverty to growth.

Using nonincome measures of poverty, Moser and Ichida (2001) examined the impact on poverty of openness, inflation, terms of trade, and government consumption as a share of GDP. They found that the coefficients of openness and terms of trade were positive, while that of the inflation rate was negative. However, all these coefficients were either statistically significant only at a 10% level or statistically insignificant. Based on these results, Moser and Ichida claimed that macroeconomic stabilization programs do not exert a direct impact on poverty, but rather do so indirectly through raising the level of per capita GDP. Similarly, Cashin et al. (2001) did not find any statistically significant impact of macroeconomic policies on human capital development indicators other than economic growth.

Corruption and Poverty

Poverty reduction is heavily influenced by bureaucratic constraints (World Bank 2001). A government needs to be transparent and accountable to the people in order to improve service delivery by reducing corruption or harassment. A high degree of corruption may worsen poverty through various channels. First, corruption slows the rate of poverty reduction by reducing growth (Gupta et al. 1998). Second, corruption deteriorates income inequality, which in turn is harmful to growth (Alesina and Rodrik 1994). Third, corruption may diminish the impact of social programs on poverty by extending benefits to relatively wealthy groups,

increasing the operating costs of government, and discouraging human capital and health care development for the poor. Gupta et al. (1998) have estimated the impact of growth in corruption on growth in income measures of poverty (defined as the income growth of the bottom 20 percent of the population), using cross-country data for 1980-1997. Based on the Ordinary Least Squares (OLS) and instrumental variable estimates approaches, they found that higher levels of corruption are associated with lower income growth for the poor. They also demonstrated that corruption reduces the overall rate of GDP growth. Based on these findings, they concluded that corruption worsens poverty by reducing economic growth.

Public Social Spending and Poverty

In recent years, the persistence of poverty in developing countries has generated doubt over the effectiveness of the relevant government spending policies. Moreover, the fact that a decline in total net ODA assistance since the second half of the 1990s, both at an absolute level and in terms of GNI (as reported in Table 1), has awakened the world to the fact that public social expenditure has become more important than ever in the face of declining ODA.

Stewart (1998) stated that the effectiveness of a social safety net for the poor is high when it is targeted to them. Lopes (2002) analyzed the linkage between public social spending and nonincome measures of poverty in the Sub-Saharan African region and found that absolute levels of social spending—measured by social expenditures as a share of GDP or in per capita US dollars, not in terms of total public expenditure—matter most for improving social outcomes. He then stressed that governments should not view mere rises in the shares of government spending as sufficient conditions to deem social allocations being more adequate, let alone to claim that more resources are being channeled to priority social sectors. Further, Anand and Ravallion (1993) found a positive impact of public health care spending on life expectancy.

IMF and Poverty

While there are a large number of studies on the impact of IMF programs on macroeconomic variables (for example, Conway 1994; Killick et al. 1992; Goldstein and Montiel 1986), there are few studies, except case studies, that have dealt with the direct role of the IMF in reducing poverty. This reflects the fact that the IMF has traditionally placed priority on improving macroeconomic performance; particularly balance of payment positions, fiscal deficits, inflation rates, and currency devaluation. In support of this practice, there used to be a consensus that achieving an overall macroeconomic performance would help lower poverty. However, there is a growing awareness now that the IMF can affect poverty explicitly through various economic policies; an awareness that has persuaded the IMF to undertake new initiatives, as evidenced by the introduction of the PRGF, and to closer collaborate with the World Bank, NGOs and donors.

In one of the earliest studies, Johnson and Salop (1980) examined the impact of IMF-supported programs on poverty and income inequality in six countries, using macroeconomic variables (e.g., growth, inflation, exchange rate devaluation, wages, and government spending) as proxies for poverty and inequality indicators. They concluded that the programs had distributional

repercussions and found that these consequences were crucially dependent on the structure of the economy, the long-term effects of factor price adjustments (through increased capital inflow and the correspondent increased rate of investment), and the structure of poverty. Moreover, Pastor (1987), focusing on IMF-supported programs in 18 Latin American countries for 1985-1981, compared macroeconomic indicators in the year preceding the program to those in the final year of the program. Using nonparametric techniques, Pastor found that the program reduced labor's share of income relative to both the pre-program levels and a control group of Latin American countries that did not undertake IMF-supported programs. Assuming that the average changes in total income were positive, the finding suggests that returns to capital increased amid a declining share of income for labor; hence poverty and inequality worsened.

In the recent literature, Easterly (2000) examined the effect of IMF and World Bank adjustment lending on growth based on household survey data of 65 countries in 1980-1999 and found no effect. Using income measures of poverty, he subsequently examined the effect of IMF and World Bank adjustment lending on poverty reduction for 1980-1998. While IMF and World Bank lending had no direct effect on poverty reduction (using the number of adjustment loans per year during the poverty spell), he found that such lending has a strong positive interaction effect with economic growth. Namely, such lending lowers the growth elasticity of poverty reduction by smoothening consumption for the poor and lowering the rise in poverty for a given contraction, but lowers the fall in poverty for a given expansion. This probably happened because both the IMF and World Bank conditions might be less austere during a contraction and more austere during an expansion. He stressed that lowering the sensitivity of poverty to an aggregate growth rate could be dangerous because it gives the poor less of a stake in overall good economic performance. Therefore, the results suggest that growth under adjustment lending is less pro-poor than in economies without it, although contraction under the adjustment lending hurt the poor less than contractions not aided by such lending.

Additionally, Garuda (2000) estimated the effect of IMF-supported programs on income measures of both poverty and inequality based on a database of 58 programs in 39 countries for 1975-1991. Garuda introduces counterfactual thinking by using a propensity score estimation method in order to reduce the selection bias inherent in comparing program and non-program countries, following the application of Dehejia and Wahba (1998). Propensity scores represent the probability that either program or nonprogram countries would have agreed to an IMF-supported program at some point before the decision is made, regardless of what they ultimately decided to do. Once the scores are generated, observations are divided into groups by the extent of scores, within which countries are further subdivided into program and non-program countries in order to control for systematic differences between them prior to the decision. Garuda found that countries with a low propensity and IMF involvement show an improvement of 10-15 percentage points in their Gini Coefficient, level of income, and lowest quintile relative to the control groups. As propensity scores increase, countries with IMF-supported programs show less significant improvements than those that do not

have IMF support, suggesting that the IMF' role in lowering poverty and inequality has been less effective. Garuda stressed that these results might be strongly affected by differences in program implementation in program countries and by the composition and extent of adjustment in nonprogram countries, rather than exogenous shocks.

4. Linkages between Poverty, Economic Policies, and IMF-Supported Programs

Given that social indicators have improved over the last two decades in low-income countries, as shown in Charts 1-4, this section first examines to what extent various economic factors and political/social risk environments have been linked to such improvements; and subsequently, investigates the role of the IMF-supported programs on those improvements. To measure this linkage, this paper estimates statistical linkages by first introducing the basic model without the role of the IMF, followed by the introduction of IMF-related variables into the basic model.

The Basic Model

As a first step, each education (health) indicator is regressed on government spending on education (health). As education-related dependent variables, this paper uses the five earlier noted indicators: adult illiteracy rate (ILLITE_ADU as reported in Chart 1), youth illiteracy rate (ILLITE_YOU), primary school pupil-teacher ratio (PTRATIO), primary school enrollment ratio (SCHPRI), and primary school enrollment ratio for females (SCHPRIWO). A decline in ILLITE_ADU, ILLITE_YOU, and PTRATIO and an increase in SCHPRI and SCHPRIWO are referred to as improvements in education indicators. As health-related dependent variables, the six earlier noted variables are used: life expectancy at birth (LIFE reported in Chart 3), mortality rate for infants (MORTI), mortality rate for children under five (MORT5), the number of physicians per 1000 people (PHYSICIAN), DPT immunization ratio (IMMUDPT), and measles immunization ratio (IMMUMEAS). An increase in LIFE, PHYSICIAN, IMMUDPT, and IMMUMEAS and a decline in MORTI and MORT5 indicate improvements of health indicators. While it may be appropriate to select a few indicators by examining the degree of correlation between nonincome and income measures of poverty, this paper attempts to use all 11 indicators. This is partly because such a comparison is not possible for low-income countries due to the lack of data; this issue should be examined in a future research project by expanding the number of sample countries. Also, since missing data problems make it difficult to pick up a few "best" explanatory variables, it seems reasonable here to use all indicators as long as their numbers of observations are sufficiently large enough to conduct an empirical analysis.

As an explanatory variable related to the fiscal policy, three measures of government social spending indicators are used interchangeably: in terms of GDP, government total expenditure, and per capita U.S. dollars. As for public educational expenditure, the ratio to GDP (EDU_PUB), total expenditure (EDUT_PUB), and US dollars per capita (EDU\$_PUB) are used interchangeably. On public health expenditure, the ratio to GDP (HEAL_PUB), total expenditure (HEALT_PUB), and US dollars per capita (EDU\$_PUB) are used interchangeably. Moreover, per capita income is used assuming that causality from incomes to

social outcomes prevails in low-income countries. Two measures of income per capita are used interchangeably: U.S. dollars per capita GDP converted to natural logarithm (PCAP\$) and GDP per capita based on PPP converted to natural logarithm (PCAPPPP). As a control variable, the political risk index (POLRISK) is used since political/social instability is likely to worsen poverty through increasing an allocation of resources (e.g., budget, factor endowment, financial resources) to nonsocial or unproductive purposes (e.g., military and security expenditure, bribes, rent-seeking activities), destroying basic infrastructures (e.g., schools, hospitals), and killing people. POLRISK appears to be an important determinant, as demonstrated by Moser and Ichida (2001) in Sub-Sahara African countries. They have reported that infant mortality rate, life expectancy, and primary school enrollment rates are noticeably better when countries undergoing conflict are excluded.

The basic model adopts elasticity interpretations by transforming all relevant dependent and independent variables to natural logarithms. Therefore, the parameters of explanatory variables are regarded as the elasticity of nonincome measures of poverty. For example, the parameter of per capita income is regarded as the income elasticity of nonincome poverty measures or social indicators. An increase in public social expenditure and per capita income are expected to improve social indicators. Also, a decline in POLRISK is expected to improve social indicators.

Further, this model uses instrumental variables to possibly eliminate the endogeneity problems of income and public expenditure variables. To take into account possible reverse causality from social indicators to per capita income on the one hand, and from social indicators to expenditures on the other, instrumental variable log-level equations are adopted. Assuming that per capita income and public expenditures best explain social outcomes, this paper uses instrument variables that are highly correlated with per capita GDP and public expenditures, have no impact on social indicators, and are not influenced by third variables that might be causing changes in both social outcomes and per capita income. In selecting instrument variables, this paper first uses the results from the vast literature on economic growth theory (for example, Barro, 1999; Sachs and Warner, 1995) as references and then makes judgments based on the degree of simple correlation coefficients.

Consequently, the following instruments are selected as instrument variables: trade openness (OPEN reported in Table 1), size of government (GOVSIZ), the average GDP growth rates of G7 countries (whose data obtained from the International Financial Statistics of the IMF), and FINRISK (risks related to the inability to pay external debt as introduced earlier in Table 1.) Since FINRISK and ECONRISK (risks arising from a deterioration of overall macroeconomic performance as introduced in Table 1) were highly correlated to each other and the degree of correlation between FINRISK and per capita income is greater than that between ECONRISK and per capita income, this paper selected FINRISK as an instrument variable. The explanatory variables were also tested for any presence of a high degree of multicollinearity among them using simple correlation matrices; no such presence was found.

The basic model is established based on the pooled time-series data of 77 low-income developing countries for 1981-2000. With respect to PTRATIO, SCHPRI, SCHPRIWO and all health indicators, empirical analyses were performed only for 1991-2000 due to limitations in the 1980s data. Where possible, this paper performs a regression analysis for two separate periods: 1981-1990 and 1991-2000. The lack of sufficient data makes it impossible to use time dummy variables (as well as regional dummy variables). In addition to the log-level or level-elasticity specification, this paper uses log-difference or growth-elasticity specification by converting the log level to the first difference. In this case, the parameter of per capita income growth indicates the extent of a percentage change of a social indicator when the rate of income growth rises by one percent.

This paper adopts a standard generalized least squares (GLS) estimator using White's heteroscedasticity-corrected standard errors for the entire analysis in order to correct for the presence of heteroscedasticity. Analyses using the log level specification are also performed with the fixed effect and random effect models, respectively. The fixed effect model takes into account respective countries' specific features, while the random effect model considers random variations within the respective countries. Selection between fixed or random effects is made using the Wu-Hausman test, and the selected final outputs are reported in Table 2. Since the Wu-Hausman test determined the selection of the model with the random effect, the table reports the results of this model.

The main results regarding education indicators (using the elasticity specification) can be summarized as follows: First, with respect to education indicators, the coefficients of public expenditure with the first lag (EDU_PUB, EDU\$_PUB, and EDUT_PUB) were statistically significant and negative in the ILLITE_YOU equation. That is, the coefficients of EDU_PUB and EDUT_PUB were statistically significant for 1981-2000, but became statistically insignificant for 1991-2000. On the other hand, the coefficients of EDU\$_PUB were statistically significant particularly for 1991-2000. These results indicate that an increase in public educational expenditures as a share of both GDP and total expenditure contributed to lowering the youth illiteracy ratio for 1981-2000, and that their impacts emerged with a one-year lag. Nevertheless, the coefficients of EDU_PUB and EDUT_PUB became statistically insignificant in 1991-2000 as compared with the sample period of 1981-2000, suggesting that their impacts have weakened in the recent decade (while that of EDU\$_PUB holds a 1 percent level of statistical significance). As a result, only an absolute amount of public educational expenditure per capita (proxied by EDU\$_PUB) has remained an important contributor to lowering the youth illiteracy ratio in recent years. Similar results are obtained in the case of ILLITE_ADU.

The above results suggest that a government needs to pay greater attention towards increasing the amount of public educational expenditure rather than a mere increase in public educational expenditures relative to GDP and total expenditure—a conclusion similar to Lopes (2002). This conclusion is reasonable given that the progress of human capital development in low-income countries remains far behind that in other developing countries.

Meanwhile, the coefficients of EDU\$_PUB on PTRATIO, SCHPRI, and SCHPRIWO were statistically insignificant, probably because public educational expenditure has not been sufficient enough to generate any positive impacts on the pupil-teacher ratio and primary school enrollments. These results further strengthen the view that a government needs to improve not only the quantity of public educational expenditure, but also the efficiency of the use of such funds and the quality of education outcomes by setting clear targets (for example, specific figures for the pupil-teacher and primary school enrollment ratios) and intensifying the focus on the poor, youth, and females.

Second, per capita GDP significantly improves the explanatory power of all the models of education indicators. In particular, PCAPPPP not only significantly improves the size of the R^2 ratio but also forms a statistically significant coefficient in all education indicators. In addition, PCAPPPP generally has a lagged effect on ILLITE_ADU, SCHPRI and SCHPRIWO, suggesting that it takes at least one year for income per capita adjusted for PPP to exert an impact on lowering illiteracy and pupil-teacher ratios and increasing primary school enrollment ratios. The overall results suggest that a government is able to improve education indicators by placing more emphasis on increasing overall income levels per capita, in addition to shifting the public expenditure bias toward education.

Third, POLRISK provides a powerful explanatory coefficient that helps explain all education indicators except PTRATIO, as evidenced by an increase in the coefficient of determination (R^2) and the level of statistical significance. On average, a one percent improvement in the political risk index leads to an about 0.1 ~ 0.2 percent improvement in ILLITE_YOU and ILLITE_ADU and a 0.5 percent improvement in SCHPRI and SCHPRIWO. This indicates that social unrest, conflicts, and political/social instability deteriorate illiteracy and school enrollment ratios through raising difficulties for both teachers and students to commute to schools and lowering both the quantity and quality of educational facilities and equipment. Thus, a government should give priority to ameliorating the political risk environment as a precondition for improving education indicators.

With respect to health indicators, the main results, reported in Table 2, can be summarized as follows: First, an increase in public health expenditure contributed to improving IMMUMEAS, IMMUDPT, LIFT, MORTI and MORT5. However, their impacts emerged after a one- or two-year lag, suggesting that it takes between one and two years before increased public health expenditure effects a clear improvement in the immunization ratios, life expectancy, and mortality rates. This makes sense since some indicators such as LIFE and MORTI and MORT5 might take some time to show any improvement. On the other hand, no statistically significant impact of public health expenditure was present in the case of PHYSICIAN, indicating that a government needs to improve the quality of health care.

Second, per capita income turns out to be one of the most important determinants of health outcomes and its impact tends to be contemporaneous. The results suggest that greater efforts to improve per capita income by a government could bring out an immediate improvement in health conditions. Compared with education indicators, for example, the immunization ratios and

mortality rates can be improved immediately if the poor obtain sufficient income so that they gain greater access to basic foods, vaccinations, hospitals, etc.

Third, the coefficients of POLRISK were statistically significant and positive with respect to IMMUMEAS, IMMUDPT, and PHYSICIAN in all cases, and LIFE in some. Further, an increase in POLRISK contributed to lowering MORT5. The results suggest that like education indicators, an improvement in the political risk environment is a precondition for improving health conditions.

This paper also performed regression analyses using the first difference specifications based on the GLS method^v. The growth-elasticity specifications were found to lower the overall explanatory power of the model as well as the statistical significance levels of all explanatory variables in all education and health models. The results indicate that the log-level specification—rather than the log-difference specification—better explains movements of social indicators. The weak relationship between the growths of social indicators and explanatory variables makes sense, since the rates of economic growth, growth rates of public expenditures, and growth rates of political risks tend to be relatively volatile in developing countries owing to the frequent changes in the terms of trade, high degrees of responsiveness to natural disasters, frequent occurrence of social unrest, and a heavy dependence on the economies of industrial countries; while social indicators tend to be stable in the short term.

The Role of IMF-Supported Programs

Based on the results obtained from the basic model detailed above, this paper uses the log level specification and adopts the basic models introduced earlier. To assess the impact of IMF-supported programs on social indicators, the following three approaches were adopted.

The first is to simply use a dummy variable (IMF_D), which is equal to 1 if a country adopts an IMF-supported program for more than six months during the year under investigation and 0 otherwise. These data can be obtained from various versions of IMF annual reports, and the specification assumes that all the complex channels of IMF influences are embedded in the dummy variable. The lagged variable of IMF_D is also used interchangeably.

The second is to use the amount of new loans disbursed from IMF (total drawings on the General Resources Account of the IMF excluding drawings in the reserve tranche), converted to a natural logarithm (IMFD\$). Since disbursements from second drawings onward are generally permitted only upon the fulfillment of a few performance criteria set in advance and specified in the programs (so-called “conditionality”), the availability of the IMF funding indicates that the IMF-supported programs have been successfully implemented. For this reason, the use of IMFD\$ is likely to provide a better measure of the IMF impact than the IMF dummy variable. This data is obtainable from the Global Development Finance database compiled by the World Bank. Also, the outstanding IMF loans as a share of GDP (repurchase obligations to the IMF with respect to all uses of IMF resources, excluding those resulting from drawings in the reserve tranche [WDI_IMF]) are used interchangeably with IMFD\$. Thus, this paper tests the impact of the size of IMF loans in terms of both flow data (IMFD\$) and stock data (WDI_IMF).

The third approach is to recognize that the IMF is able to exert effects on economic policies through two channels: one through affecting the elasticity of public social expenditures and the other through influencing the elasticity of per capita income. Assuming that the IMF could affect the elasticity of public educational (health) expenditure on education (health) indicators, the parameter of cross variables between IMF_D and public educational (health) expenditures is tested. The IMF could also influence the elasticity of per capita income on education (health) indicators. For example, the IMF could affect the level of per capita GDP by improving overall macroeconomic performance (such as fiscal and current account balances and inflation as reflected in ECONRISK, liberalization as reflected in OPENNESS, and rationalization of the government and privatization as reflected in GOVSIZ) and external payment conditions (such as exchange rate stability and external debt burdens as reflected in FINRISK). This overall IMF impact could then be assessed by estimating the parameter of cross variables between IMF_D and PCAPPPP. Table 2 reports the results of models whose coefficients of cross variables were statistically significant.

If the positive impact of the IMF-supported programs prevails, the coefficients of IMF_D, IMFD\$, WDI_IMF, cross variables between public expenditure and IMF_D, and cross variables between PCAPPPP and IMF_D would be negative in the ILLITE_YOU, ILLITE_ADU, PTRATIO, MORTI and MORT5 equations, and positive in the SCHPRI, SCHPRIWO, IMMUMEAS, IMMUDPT, PHYSICIAN, and LIFE equations. The model using the log specification is estimated with the random effect. The main results where the IMF-related variables hold statistically significant coefficients are set out in Table 3 and can be summarized as follows:

First, the coefficients of IMF_D, WDI_IMF, and IMFD\$ were statistically significant and positive in the ILLITE_YOU equation during 1981-2000, contrary to our expectation. However, the coefficients turn out to be statistically insignificant in most cases for 1991-2000; so statistically significant differences in youth illiteracy ratios were hard to find between program and nonprogram countries. In other words, youth illiteracy ratios were higher in program countries than in nonprogram countries, but any such differences disappeared in the most recent decade. This could be interpreted as a sign of a recent improvement in the IMF-supported program designs. Meanwhile, the IMF's influence on the elasticity of public educational expenditure or per capita income on the youth illiteracy ratio was difficult to find. Therefore, IMF influences can be traced, but their impacts cannot through specific fiscal policies or pro-growth strategies.

Second, as for ILLITE_ADU, the coefficients of IMF_D, WDI_IMF, and IMFD\$ were statistically significant but their signs were mixed. Moreover, an IMF influence on adult illiteracy ratios through affecting the elasticity of public educational expenditure was non-existent. Furthermore, while its influence through affecting per capita income was present, the signs from the coefficients were mixed. Thus, the IMF's influence on adult illiteracy ratios was ambiguous. Third, an IMF impact was hardly observed in the case of PTRATIO, suggesting the need for the IMF to improve the quality levels for education in their program designs. Fourth, IMF-supported programs exerted some impact on SCHPRI, but

the signs of the coefficients were mixed. On the other hand, the IMF-supported programs contributed to improving SCHPRIWO, but any influence on female primary school enrollment ratios through affecting the elasticity of public educational expenditures (or per capita income) was not felt (in most cases).

The above results suggest that the IMF's contribution to improving human capital development has been inconclusive. While there is some evidence that program countries improved adult illiteracy ratios, primary school enrollments, and female primary school enrollments as compared with nonprogram countries, the IMF's impacts were unfavorable in other cases. Also, the influence of the IMF-supported programs on education indicators through affecting the elasticity of public educational expenditures or per capita income has been limited. These results suggest that there is room for IMF-supported programs to shift their focus toward more education- (by raising public education expenditure as well as efficiency of the use of funds) and growth-oriented objectives.

As for health indicators, IMF impacts have been even more limited than those on education indicators. There was some evidence that program countries improved IMMUMEAS and IMMUDPT as compared with nonprogram countries, but their signs were opposite to the expected ones in some cases. The IMF's favorable influence on health indicators through shifting the elasticity of public health expenditures or per capita income is not noticeable. Moreover, IMF-supported programs did not exert any impact on PHYSICIAN, LIFE, and MORTI. The fact that IMF-related variables are statistically insignificant in most cases indicates that there is substantial room for the IMF to improve program designs toward being more pro-poor, health care-oriented.

Long-Term Effects

The above approaches have examined short-term impacts of economic, political risk, and IMF-related variables on social outcomes using annual data. While some of these variables have proven to exhibit substantial degrees of explanatory power in the short-term model specification, their long-term relationships should be equally examined by smoothing variations arising from any specific year, and thereby estimating intertemporally stable relationships between explanatory variables and social outcomes. Also, a long-term estimate helps to mitigate measurement problems arising from missing data. The IMF' role should also be examined from a long-term view, since various unrecognized exogenous shocks often dilute the true impact of IMF-supported programs.

To take into account these aspects, this paper examines the long-term impacts of explanatory variables on social indicators by converting annual data to the five-year frequency data (averaging the five-year data: 1981-1985, 1986-1990, 1991-1995, 1996-2000). This exercise enables the assessment of the long-term impacts on all education (health) indicators from the 1980s (mid-1980s) since the data on them from 1980, 1985, and 1990 (1985 and 1990) are available. Based on panel data using five-year frequency, the model adopts the GLS approach with a random effect.

The main results are set out in Table 4 can be summarized as follows: First, the table shows that compared with short-term effects, education indicators were hardly linked to public educational spending in the long term. On health indicators,

both short- and long-term effects of public health spending remain limited. These results suggest that public social expenditures have not played an important role in improving social outcomes. This may be attributable to the lack of focus or clear targets for public spending policies when public funds are allocated to education and health care. Also, they might be due to the mismanagement of public funds, or that priority was given to the rich over the poor. Second, the long-term effects of political risk were less pronounced in the case of education indicators as compared with its short-term effects. The long-term effects were more apparent for health indicators, suggesting the importance of improving the political risk environment in order to achieve better long-term health outcomes. Third, per capita income has remained the most important factor contributing to social outcomes. Thus, there is no doubt that a government needs to improve income levels in order to achieve better social outcomes.

Fourth, with regards to the IMF-related variables, the table shows that the coefficients of IMF_D were statistically significant and negative in the ILLITE_YOU and ILLITE_ADU equations. Also, the IMF's influences were present on ILLITE_YOU and ILLITE_ADU through affecting the elasticity of per capita income. However, no impact of the IMF-supported programs on PTRATIO, SCHPRI, and SCHPRIWO were traceable. With respect to health indicators, the IMF's influences were even more limited, although there was some evidence that the IMF's impact was present in the case of PHYSICIAN. Overall, the IMF needs to redesign programs; especially by setting clear targets on the quality and quantity of education and health care indicators.

World Bank Effect

In designing programs, the IMF typically includes macroeconomic policies and related structural reforms as its primary responsibility. At the same time, the IMF cooperates closely on conditionality with the World Bank. In particular, the World Bank takes the lead in advising governments on the design of poverty reduction strategies, in areas such as poverty assessments; monitoring; structural and sectoral issues; social issues; and costing priority poverty-reducing spending. Furthermore, Poverty Reduction Strategy Papers (PRSP) are prepared by the member countries through a participatory process involving domestic stakeholders as well as the World Bank and IMF. The papers, which are updated every three years with annual progress reports, describe the country's macroeconomic, structural and social policies over a three-year or longer horizon (with a view to promote broad-based growth and reduce poverty) and illustrate associated external financing needs and major sources of financing. Interim PRSPs summarize the current knowledge and analyses of a country's poverty situation, describe the existing poverty reduction strategy, and lay out the process for producing a fully developed PRSP in a participatory fashion. The country documents, along with the accompanying IMF/World Bank Joint Staff Assessments, are made available on their respective websites with the agreement of the member country.

To take into account these collaboration aspects, this paper examines the impact of World Bank support on social outcomes. This paper uses the amount of the IBRD and concessional IDA combined loans dispersed each year to a country,

converted to a natural logarithm (WBD\$)—rather than using a dummy variable indicating the acceptance of World Bank programs or the number of programs or projects—simply because only this data was available to public. While IMF and World Bank coordinate closely to formulate an macro economic policy and structural reforms toward low-income countries, it is difficult to quantify solely this part of relationship. This is because while the World Bank provides financial supports to a wider range of projects than does the IMF, the available data does not distinguish World Bank loans coordinated together with IMF from its loans disbursed for sectoral projects. Therefore, this paper does not attempt to quantify this relationship and simply place WBD\$ (interchangeably with the IMF-related variables) to examine its impact on nonincome measures of poverty.

Table 5 shows that the World Bank loans did not generate significant favorable impacts in most cases except on SCHPRI, IMMUMEAS and IMMUDPT, contrary to our expectation. Also, the sign of the coefficient of ILLITE_ADU was positive, suggesting the size of World Bank loans did not contribute to lowering the adult illiteracy ratio.

Regarding long-term relationships, the World Bank's impact on education outcomes was more pronounced as compared with its short-term relationships. However, the signs of the coefficients of WBD\$ in the ILLITE_YOU and ILLITE_ADU equations were positive, indicating that the World Bank loans tended to deteriorate illiteracy ratios, contrary to our expectation. Moreover, the long-term impact of World Bank loans was largely non-existent in the case of health indicators. Namely, the coefficient of WBD\$ was statistically significant and negative only in the PHYSICIAN equation.

Thus, it is concluded that overall positive impacts of World Bank loans on education and health outcomes are difficult to find in either short or long term impacts. These results could reflect that even though the World Bank provides about \$20 billion to more than 100 developing countries every year, the amount of loans provided to education and health projects in each country could be limited given the wide range of mandates are assigned to this institution. Moreover, the results could be attributable to the lack of specific targets determined by the World Bank and the inefficient use of its funds by recipient countries.

5. Conclusions

This paper has shown that a higher level of income is found to be the most powerful weapon to achieve higher educational and health standards. A higher level of income can be brought about by faster stabilization and sustained economic growth, and would be closely associated with the achievement of overall macroeconomic stability, external debt sustainability, trade liberalization, and rationalization of the government.

Moreover, this paper has demonstrated that public educational and health care expenditures do contribute to improving education and health outcomes, but their impacts to date are somewhat limited. This could reflect that the allocations of public expenditure toward education and health are small relative to current and infrastructure expenditures, so their amounts are not sufficient to exert any discernable impacts on social outcomes. Also, this could be attributable to the

institutionalized neglect of the poor, inefficient use of funds, mismanagement of public funds, and bureaucratic incapability. In particular, the lack of special care for the poor, youth, and females would work against improving overall social outcomes, which are closely linked to poverty and inequality.

This paper also demonstrated that more attention is needed to the political risk environment surrounding a country, since this environment provides the preconditions for improving social outcomes. A better political/social risk environment could raise per capita income through realizing the better use of a country's endowment (i.e., labor, land, skills, capital stock.) A series of simple regression analysis (by regressing components of POLRISK on 11 social indicators) reports that four components—namely, military in politics, religious tensions, democratic accountability, and law and order—are closely associated with all social indicators in the short term (based on annual data). In the long term (based on five-frequency data), two components (military in politics and religious tensions) were found to be closely correlated with all social indicators. Thus, an improvement in these areas should be given greater attentions.

Moreover, this paper has found that the impact of IMF (and World Bank) on poverty reduction has generally been weak or unfavorable. This suggests that the IMF in collaboration with the World Bank needs to redesign their programs targeting low-income countries toward more education- and health-oriented objectives. This conclusion is consistent with current IMF efforts to reform their PRGF-supported programs. In doing so, the IMF-supported programs should make substantial efforts to improve the elasticity of public expenditures and per capita income on social outcomes. As for measures related to public expenditures, the programs could set clear and consistent targets on social outcomes and intensify their resource allocations to the people most in need. As the same time, the IMF in collaboration with the World Bank should encourage a country to improve their capacity to monitor developments of social outcomes and strengthen accountability for results. As for measures related to per capita income, the programs should pay more attention to pro-growth measures by rationalizing government functions (with improved bureaucratic capability), promoting trade liberalization, and lowering overall financial risk with careful consideration given to the impacts of these measures on poverty and inequality.

Finally, this paper points out areas of research that should be dealt with in next projects. Firstly, the contents of PRGF programs should be analyzed by comparing similarities and differences among program countries. Secondly, the relationship between political/social environment and poverty should be analyzed in a more systematic manner. While this paper used the Political Risk index, the index was handled exogenously as a black box and as a composite indicator. Since donors and international organizations have increasingly recognized that a mere increase in fixed investment, trade liberalization, and debt relief does not lead to economic growth (and hence poverty reduction), the issue of how the political/social environment interacts with the relationship between poverty reduction and economic growth should be investigated fully. Third, the impact of ODA on poverty reduction and economic growth should be analyzed together with its relationship with financial assistance by international organizations.

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Chart 1. Trends in Education Indicators, Program and Nonprogram Countries

Chart 1a. Youth Illiteracy Rate (%): 1980-2000

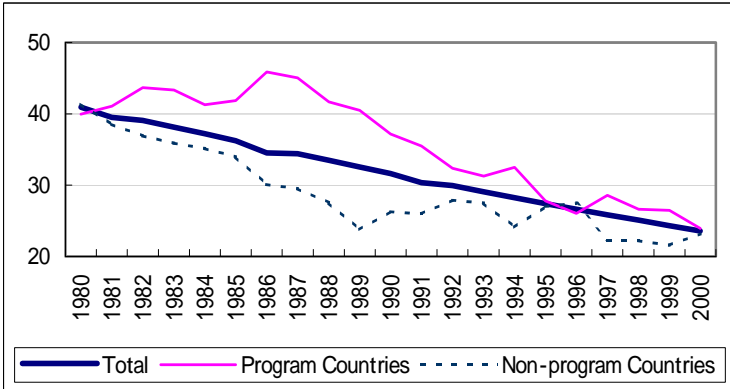


Chart 1b. Adult Illiteracy Rate (%), 1980-2000

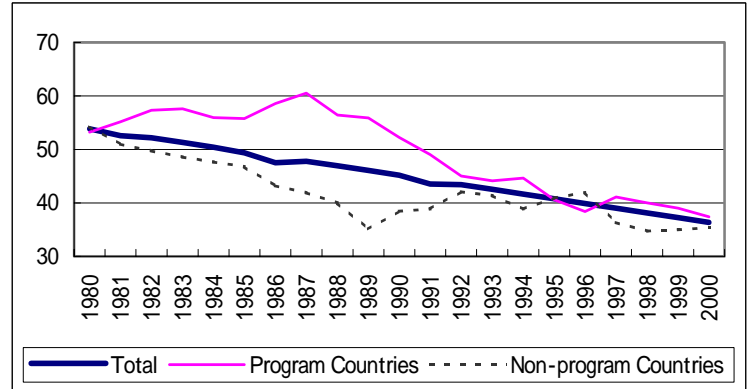


Chart 1c. Pupil-Teacher Ratio (%): 1990-1996

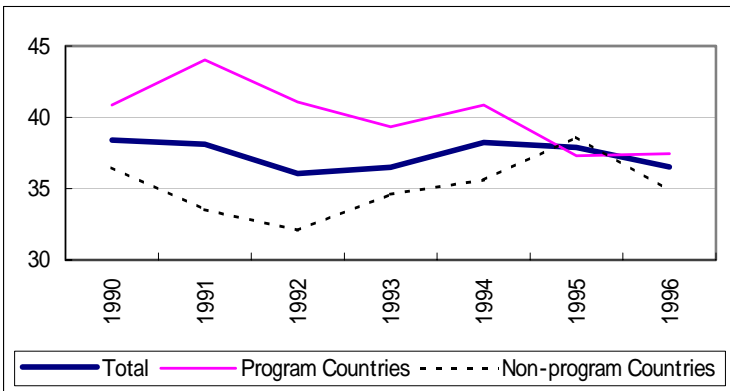


Chart 1d. Total School Enrollment Ratio (%): 1990-1998

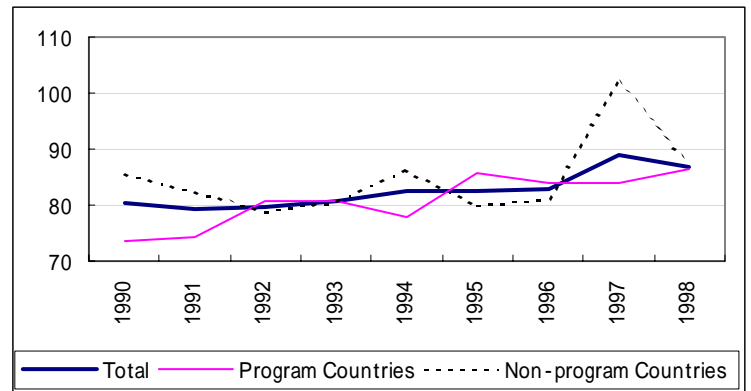
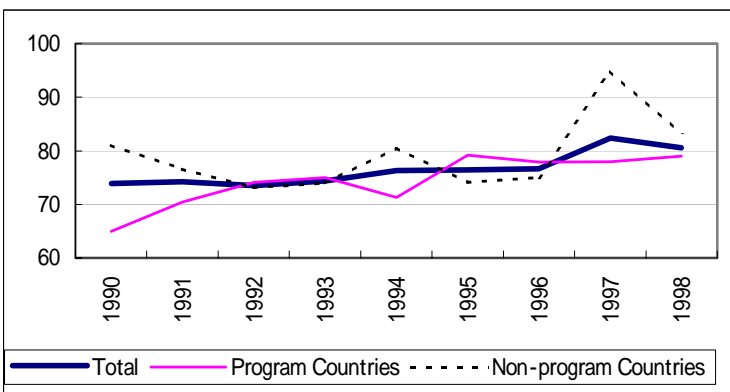


Chart 1e. Female School Enrollment Ratio (%): 1990-1998



Source: World Development Indicators, World Bank.

Chart 2. Trends in Education Indicators by Region

Chart 2.a. Youth Illiteracy Rate (%), 1980-2000

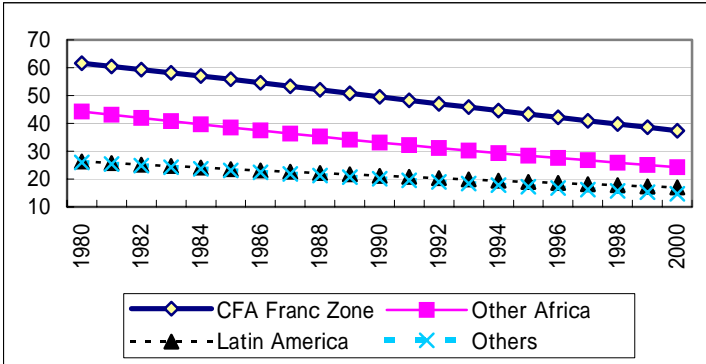


Chart 2.b. Adult Illiteracy Rate (%), 1980-2000

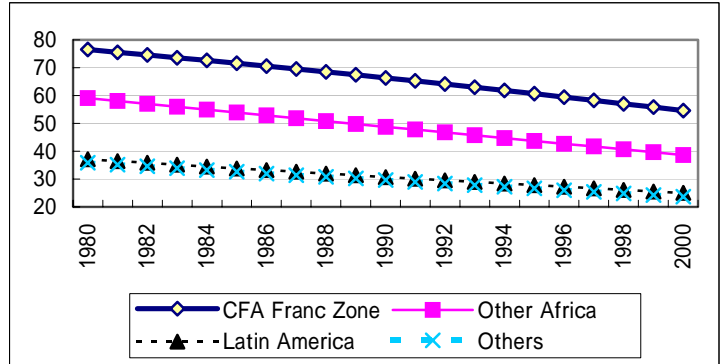


Chart 2.c. Pupil-Teacher Ratio (%), 1990-1998

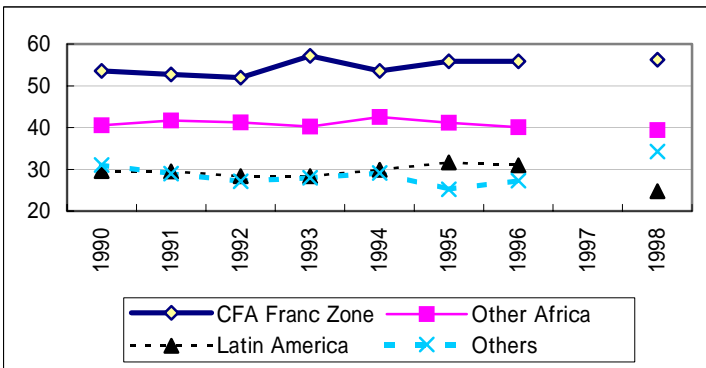


Chart 2.d. Total School Enrollment Ratio (%), 1990-1998

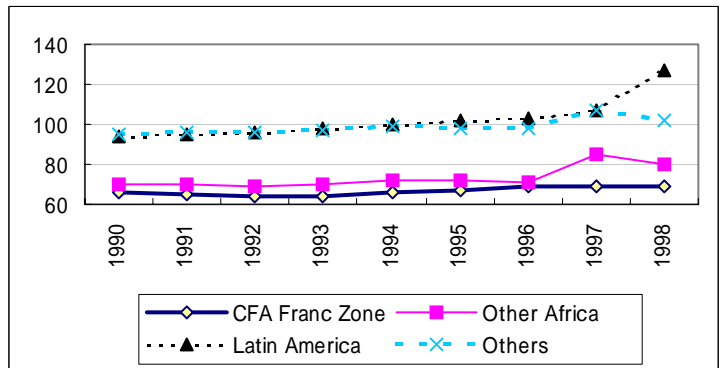
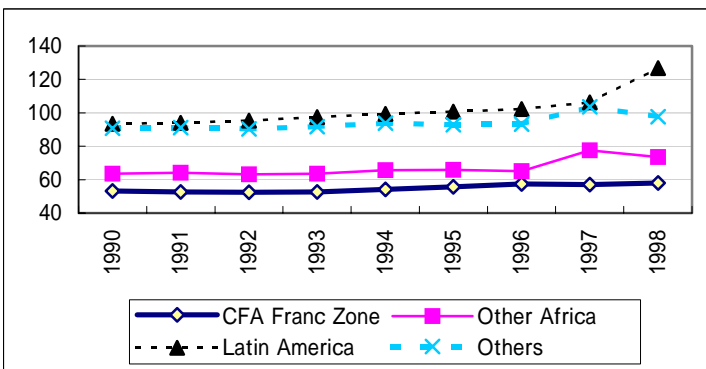


Chart 2.e. Female School Enrollment Ratio (%), 1990-1998



Source: World Development Indicators, World Bank.

Chart 3. Trends in Health Indicators, Program and Nonprogram Countries

Chart 3a. Measles Immunization Rate (%): 1980-1999

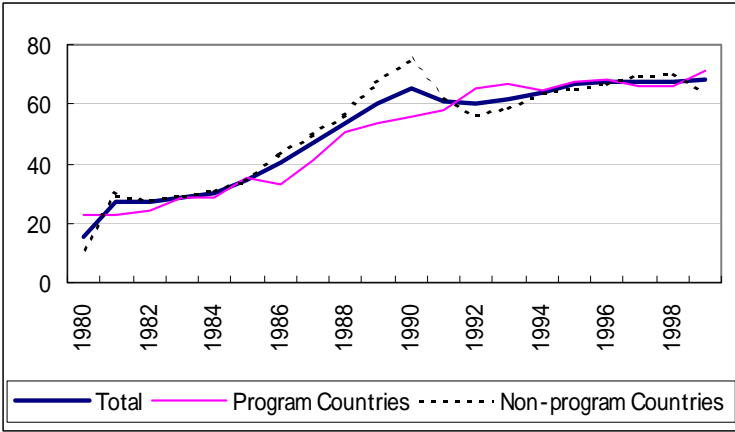


Chart 3b. DPT Immunization Rate (%): 1980-1999

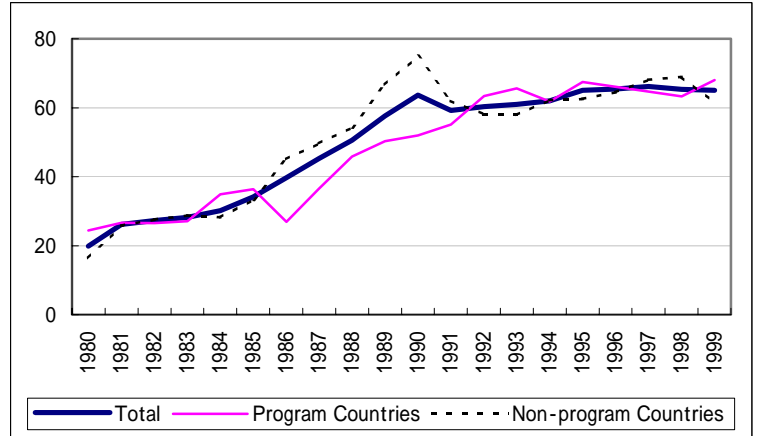


Chart 3c. Number of Physicians Per 1000 People: 1980-1998

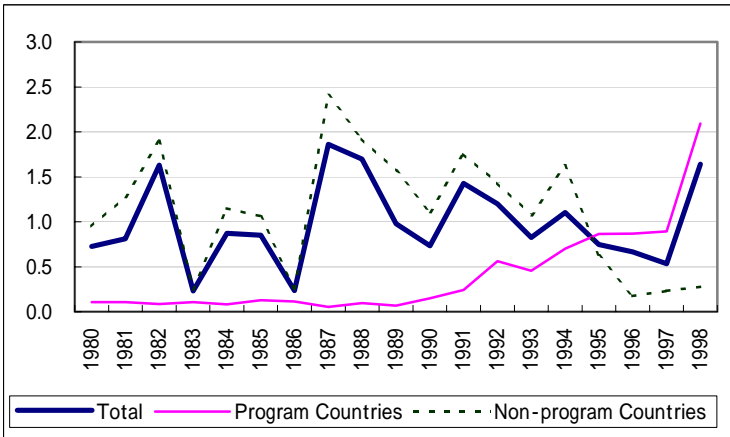


Chart 3d. Life Expectancy (Years): 1992-2000

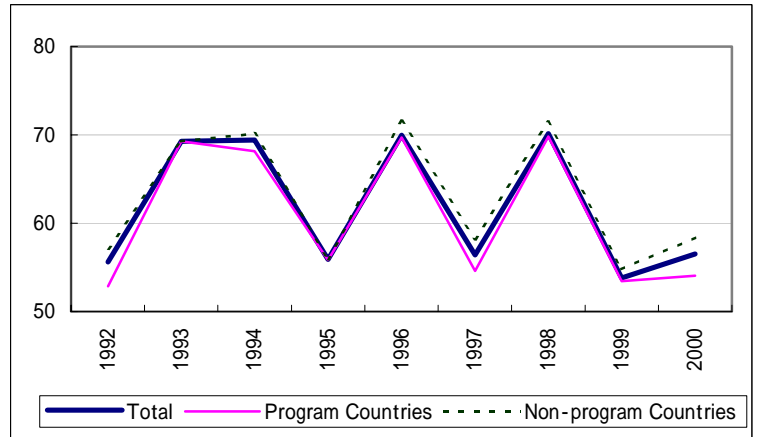


Chart 3e. Infant Mortality Rate Per 1000 Live Births: 1980-2000

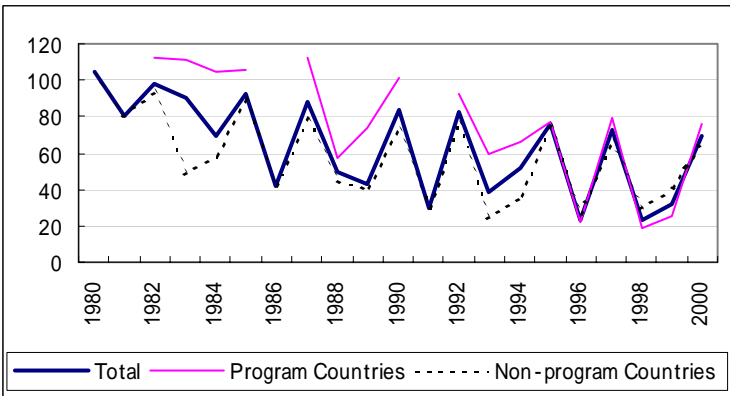
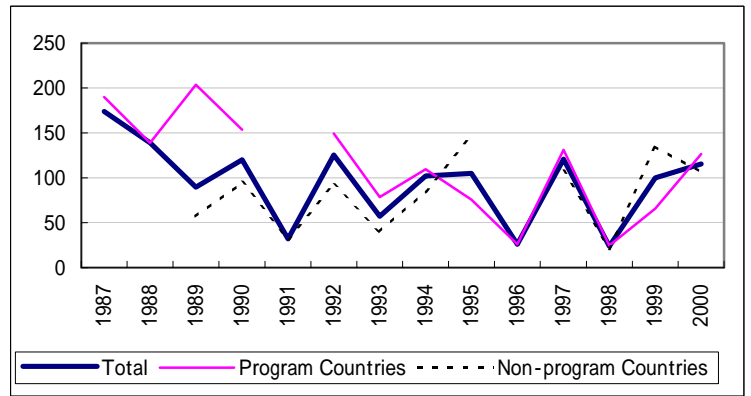


Chart 3f. Under-5 Mortality Per 1000 Live Births, 1987-2000



Source: World Development Indicators, World Bank.

Chart 4. Trends in Health Indicators by Region

Chart 4.a. Measles Immunization Rate (%), 1980-1998

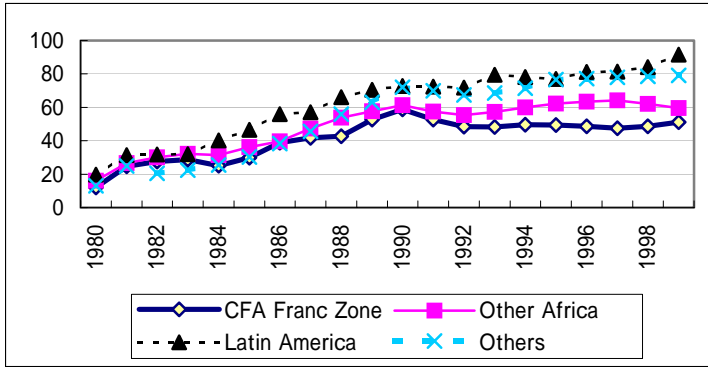


Chart 4.b. DPT Immunization Rate (%), 1980-1999

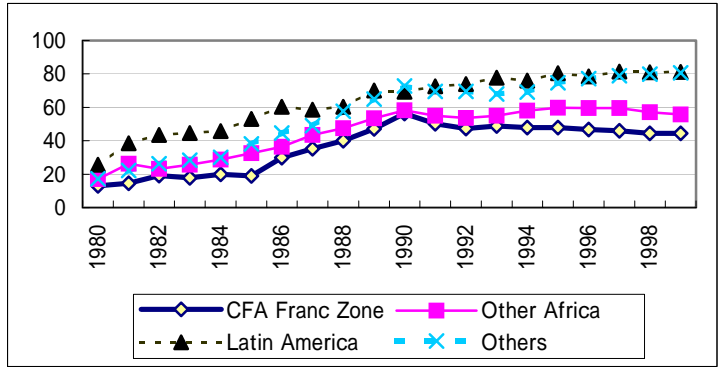


Chart 4.c. Number of Physician per 1000 People, 1980-1997

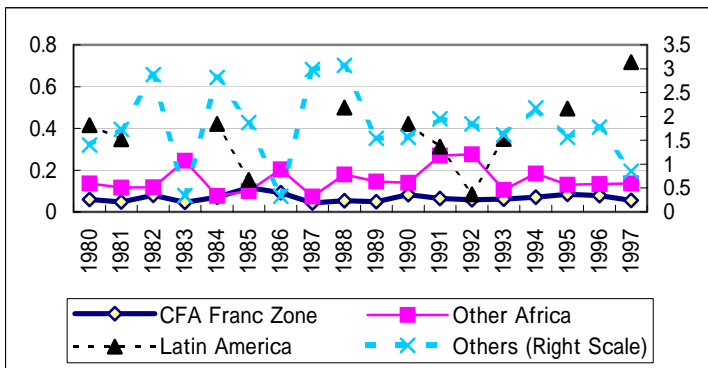


Chart 4.d. Life Expectancy (Years), 1980-2000

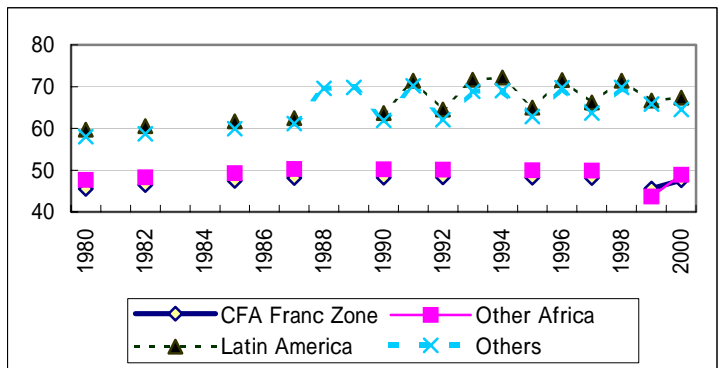


Chart 4.e. Infant Mortality Rate Per 1000 Live Births, 1998-2000

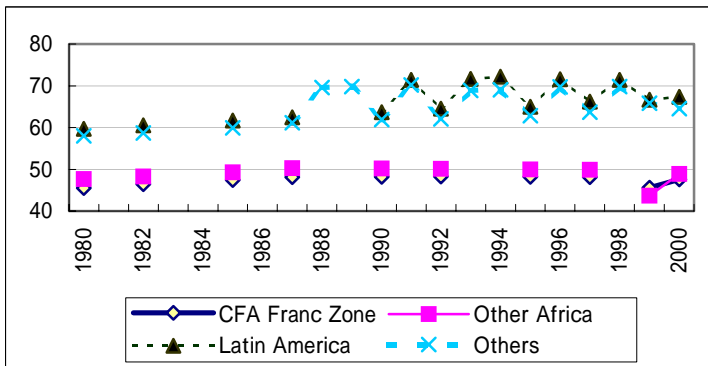
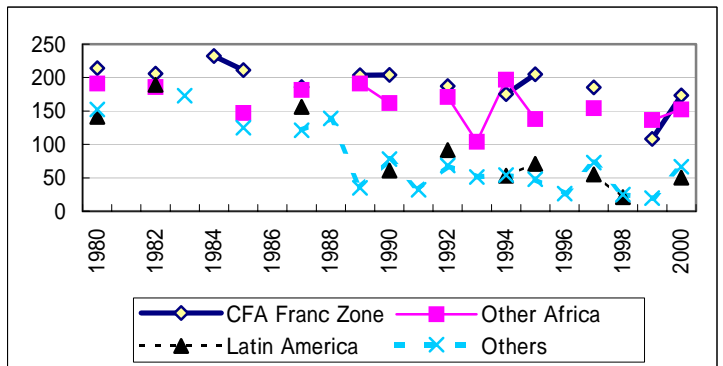


Chart 4.f. Under-5 Mortality Per 1000 Live Births, 1980-2000



Source: World Development Indicators, World Bank.

Table 1. Basic Indicators, 1981-2000

		1981-1985			1986-1990			1991-1995			1996-2000		
		Total	IMF	Others	Total	IMF	Others	Total	IMF	Others	Total	IMF	Others
MACROECONOMIC INDICATORS:													
Real GDP Growth (%)	GDPG	3.0	1.7	4.3	2.9	2.9	2.9	1.1	0.8	1.6	4.1	4.3	3.6
Real GDP per Capita (US dollars)	PCAP\$	621	480	763	706	404	1,045	637	479	975	707	525	1,129
Real GDP per Capita (PPP)	PCAPPPP	1,217	1,066	1,407	1,794	1,078	2,707	1,739	1,484	2,433	1,903	1,624	2,607
Inflation (%)	INF	77.0	19.5	160.1	111.8	24.7	276.3	207.6	95.4	473.4	32.3	11.4	80.2
Current Account Balance (% of GDP)	CA	-8.9	-7.8	-10.2	-6.5	-6.7	-6.2	-8.1	-7.6	-9.3	-8.5	-8.3	-9.1
Fiscal Balance (% of GDP)	FIS	-7.2	-8.3	-5.7	-5.3	-5.1	-5.4	-4.7	-4.8	-4.5	-3.4	-3.4	-3.3
Government Consumption Expenditure (% of GDP)	GOVSIZ	17.4	15.9	19.3	16.7	13.8	20.8	16.5	13.6	23.5	14.2	13.3	17.1
External Debt (% of GDP)	EDEBTG	63.8	73.0	51.7	100.9	112.5	81.5	110.1	120.1	88.0	102.9	116.0	71.1
External Debt Services (% of Exports of G&S)	EDEBTRATIO	17.3	19.7	14.1	20.6	25.7	12.5	15.5	18.7	8.9	13.5	15.6	8.7
International Reserves (Months of Imports)	RESM	1.8	1.5	2.2	2.2	1.7	3.2	2.7	2.7	2.7	3.4	3.3	3.8
Trade (% of GDP)	OPEN	65.3	61.7	69.5	63.7	57.7	71.4	75.7	67.9	92.2	77.9	76.6	81.5
Population Growth (%)	POPG	2.3	2.5	2.1	2.3	2.6	2.1	2.2	2.1	2.2	2.2	2.2	2.2
ODA (Millions of US Dollars)	AID\$	203	296	100	313	379	219	369	473	186	315	368	211
Aid (% of Gross National Income)	ADIGNI	12.1	11.6	12.8	16.0	15.6	16.7	18.6	16.8	22.3	13.0	14.7	8.9
Aid (% of Government Expenditures)	AIDGEXOP	39.8	36.0	45.1	53.6	57.3	47.8	47.8	55.4	31.4	38.0	44.9	24.7
RISK AND DEMOCRACY INDICATORS:													
Political Risk Index	POLRISK	43.9	43.0	45.9	44.7	44.8	44.6	49.0	52.3	37.3	56.2	59.4	45.5
Financial Risk Index	FINRISK	21.4	21.8	20.5	21.8	21.6	22.3	24.4	26.7	16.3	28.7	28.8	28.6
Economic Risk Index	ECONRISK	23.1	23.5	22.4	25.3	25.2	25.6	25.6	26.9	21.0	29.2	29.7	27.5
Corruption Index	CORRUPT	2.4	2.2	2.7	2.6	2.4	3.1	2.7	2.9	1.8	2.4	2.6	1.9
Political Rights Index	POLTIC	5.3	5.0	5.6	5.1	5.3	5.0	4.5	4.5	4.4	4.3	4.4	4.2
Civil Liberties Index	CIVIL	5.2	4.9	5.5	5.1	5.1	5.0	4.4	4.4	4.5	4.3	4.4	4.2
SOCIAL EXPENDITURE INDICATORS:													
Public Expenditure on Education (% of GDP)	EDU_PUB	4.3	4.5	4.2	3.9	3.0	5.0	4.3	4.0	4.9	4.1	3.9	4.6
(% of Total Expenditure)	EDUT_PUB	15.1	15.4	14.6	13.3	12.5	14.4	16.5	17.0	15.1	18.0	17.2	19.6
(Per Capita US Dollars)	EDU\$ PUB	22	21	24	27	13	44	33	21	74	33	20	72
Public Expenditure on Health (% of GDP)	HEAL_PUB	n.a.	n.a.	n.a.	2.5	1.7	3.3	2.5	2.2	3.0	2.6	2.5	2.8
(% of Total Expenditure)	HEALT_PUB	n.a.	n.a.	n.a.	7.8	7.3	8.2	8.4	8.5	8.2	9.8	11.0	6.9
(Per Capita US Dollars)	HEAL\$ PUB	n.a.	n.a.	n.a.	37	23	53	30	19	62	39	23	81

Source: World Development Indicators, World Bank; Global Development Finance, World Bank; International Country Risk Guide, The PRS Group; Freedom House Country Ratings.

Table 2. Summary Estimation Results: Linkages Between Social Indicators and Economic/Political Risk Variables

	Explanatory Variables										R ²						
	Edu. Expenditure (% of GDP)		1st Lag		Edu. Expenditure (% of Total Exp.)		1st Lag		Edu. Expenditure (US\$ per Capita)			Per Capita GDP (PPP)		1st Lag		Political Risk	
	EDU_PUB	EDU_PUB(-1)	EDUT_PUB	EDUT_PUB(-1)	EDU\$ PUB	EDU\$ PUB(-1)	PCAPPPP	PCAPPP(-1)	POLRISK								
Youth Illiteracy Rate (ILLITE_YOU)	1981-2000	0.03(0.56)	0.12***(-2.80)														0.99
	1991-2000	-0.02(-0.64)	-0.03(-0.82)														0.99
	1981-2000			-0.11(-1.57)	-0.12*(-1.70)												0.99
	1991-2000			-0.32(-1.16)	-0.19(-0.85)												0.99
	1981-2000					0.01(0.36)	-0.06*(-1.84)	-0.11(-0.83)	-0.48***(-3.86)	-0.18**(-2.48)							0.99
1991-2000					-0.03(-1.05)	-0.06***(-2.74)	-0.33***(-3.57)	0.005(0.04)	-0.11(-1.22)							0.99	
Adult Illiteracy Rate (ILLITE_ADU)	1981-2000		0.01(0.60)														0.99
	1991-2000		-0.02(-0.48)														0.99
	1981-2000			-0.04(-1.15)	-0.09**(-2.40)												0.99
	1991-2000			-0.15(-1.21)	-0.15(-1.55)												0.99
	1981-2000					-0.004(-0.15)	-0.02(-1.16)	-0.04(-0.49)	-0.33***(-4.28)	0.20***(-4.45)							0.99
1991-2000					-0.06**(-2.39)	-0.07***(-3.71)	-0.21***(-2.94)	0.01(0.15)	-0.14*(-1.97)							0.99	
Pupil-Teacher Ratio (PTRATIO)	1991-2000	-0.19**(-2.43)															0.95
	1991-2000			-0.07(-0.72)													0.99
	1991-2000							0.05(1.01)		-0.22*(-1.81)							0.97
School Enrollment Ratio (SCHPRI)	1991-2000		0.06(1.46)														0.99
	1991-2000				0.16**(2.20)												0.99
	1991-2000							-0.04(-0.85)	-0.01(-0.25)								0.99
Female School Enrollment Ratio (SCHPRIWO)	1991-2000		0.08(1.51)														0.99
	1991-2000				0.02(0.16)												0.98
	1991-2000							0.05(1.30)	0.28**(2.47)								0.99
		Health Expend. (% of GDP)	1st Lag	Health Expend. (% of Total Exp.)	1st Lag	2nd Lag	Health Expend. (US\$ per Capita)	1st Lag	Per Capita GDP (PPP)	1st Lag	Political Risk						R ²
		HEAL_PUB	HEAL_PUB(-2)	HEALT_PUB	HEALT_PUB(-1)	HEALT_PUB(-2)	HEAL\$ PUB	HEAL\$ PUB(-1)	PCAPPPP	PCAPPP(-1)	POLRISK						
Measles Immunization Rate (IMMUMEAS)	1991-2000		0.14**(2.57)														0.79
	1991-2000					0.22**(2.10)											0.83
	1991-2000						0.04(0.64)										0.84
DPT Immunization Rate (IMMUDPT)	1991-2000		0.14**(2.31)														0.85
	1991-2000					0.20**(2.02)											0.85
	1991-2000						0.16**(2.03)	-0.13*(-1.90)									0.89
Number of Physicians per 1,000 (PHYSICIAN)	1991-2000		0.09(0.42)														0.97
	1991-2000																0.98
	1991-2000																0.98
Life Expectancy (LIFE)	1991-2000	-0.02(-1.05)															0.99
	1991-2000				0.07**(2.39)												0.99
	1991-2000																0.99
Infant Mortality Rate (MORTI)	1991-2000		0.06(1.32)														0.99
	1991-2000																0.99
	1991-2000																0.99
Mortality Rate, Children under 5 (MORT5)	1991-2000	-0.01(-0.15)															0.99
	1991-2000																0.99
	1991-2000																0.99

Note: *, **, *** refer to the significance level of 10 percent, 5 percent and 1 percent, respectively. The coefficients of constant terms are omitted from the table.

Table 3. Summary Estimation Results: Linkages Between Social Indicators and Economic/Political Risk Variables Including IMF-Related Variables

Dependent Variables	Explanatory Variables														R ²			
	IMF-Related Variables				Education Expenditure						Per Capita GDP			Political Risk				
	IMF_D	IMF_D(-1)	WDI IMF	IMFD\$	(% of GDP) EDU_PUB	1st Lag EDU_PUB(-1)	(% of Total Exp.) EDUT_PUB	1st Lag EDUT_PUB(-1)	(US\$ Per Capita) EDU\$ PUB	EDU\$ PUB× IMF_D	1st Lag EDU\$ PUB(-1)	EDU\$ PUB(-1) ×IMF_D	(PPP) PCAPPPP	1st Lag PCAPPPP(-1)		PCAPPPP(-1)× IMF_D	POLRISK	
Youth Illiteracy Rate (LLITE_YOU)	1981-2000	0.05** (2.45)			0.03 (0.63)	0.12*** (-2.76)							-0.13 (-1.02)	-0.52*** (-4.40)		0.03 (0.63)	0.99	
	1981-2000		0.07*** (3.88)						-0.01 (-0.21)				-0.09 (-0.73)	-0.50*** (-4.17)		-0.18*** (-2.53)	0.99	
	1991-2000		0.07*** (3.95)										-0.08 (-0.66)	-0.53*** (-4.59)		-0.18*** (-2.56)	0.99	
	1981-2000	0.05** (2.54)								0.02 (0.62)			-0.13 (-1.00)	-0.51*** (-4.14)		-0.17** (-2.31)	0.99	
	1981-2000			0.02* (1.72)						0.01 (0.36)			-0.15 (-1.11)	-0.40*** (-3.16)		-0.20*** (-2.52)	0.99	
	1981-2000				0.05*** (2.69)			-0.04 (-0.50)	-0.05 (-0.42)					-0.85*** (-7.56)		-0.17 (-1.00)	0.99	
	1981-2000								-0.007 (-0.19)		-0.04 (-1.13)	-0.01 (-0.28)		-0.09 (-0.71)	-0.51*** (-4.22)	0.01* (1.76)	-0.18** (-2.45)	0.99
Adult Illiteracy Rate (LLITE_ADU)	1981-2000	-0.02* (-1.67)					0.01 (0.67)							-0.39*** (-8.57)		-0.17*** (-3.00)	0.99	
	1991-2000	-0.03* (-1.98)					-0.02 (-0.66)							-0.37*** (-4.26)		-0.02 (-0.25)	0.99	
	1991-2000		-0.03** (-2.35)											-0.41*** (-4.55)		0.07 (0.88)	0.99	
	1991-2000			0.03** (2.20)										-0.41*** (-4.33)		0.08 (0.92)	0.99	
	1991-2000				0.03*** (3.29)									-0.68*** (-7.11)		-0.07 (-0.71)	0.99	
	1981-2000				0.03*** (2.72)			-0.03 (-0.55)	-0.04 (-0.59)					-0.17 (-0.80)	-0.36* (-1.89)		-0.11 (-1.10)	0.99
	1981-2000									0.002 (0.12)				-0.40*** (-8.70)	-0.004* (-1.94)		-0.12** (-2.16)	0.99
	1981-2000									-0.02 (-0.68)				-0.41*** (-4.55)	-0.004** (-2.29)		0.079 (0.87)	0.99
1981-2000									-0.02 (-0.67)		-0.02 (-1.00)		-0.03 (-0.34)	-0.34*** (-4.50)	0.003* (1.90)	-0.19*** (-4.29)	0.99	
School Enrollment Ratio (SCHPRD)	1991-2000	-0.05** (-2.61)					0.05 (1.22)							0.20** (2.40)		0.42*** (3.81)	0.99	
	1991-2000				-0.06* (-1.94)				0.21** (2.47)					0.23 (1.43)		0.01 (0.04)	0.99	
	1991-2000			0.07*** (2.98)										0.34*** (2.87)		0.41*** (3.37)	0.99	
	1991-2000	-0.06*** (-2.57)												0.35*** (2.91)		0.40*** (2.95)	0.99	
Female School Enrollment Ratio (SCHPRWD)	1991-2000			0.05** (2.32)			0.09* (1.74)							0.37*** (3.43)		0.53*** (3.88)	0.99	
	1991-2000		0.04* (1.922)					0.01 (0.13)						0.26** (2.22)		-0.01 (-0.06)	0.99	
	1991-2000			0.05** (2.38)							0.06 (1.59)			0.27** (2.38)		0.52*** (3.65)	0.99	
	1991-2000							0.01 (0.09)						0.26** (2.19)	0.01* (1.78)	-0.01 (-0.06)	0.99	
Measles Immunization Rate (MMUMEAS)	1991-2000				0.04* (1.87)		0.16*** (2.73)							0.18** (2.01)		0.29 (1.65)	0.88	
	1991-2000				0.07*** (3.32)		0.12** (2.10)							0.36*** (4.85)		0.54*** (3.30)	0.82	
	1991-2000				0.04* (1.87)		0.16*** (2.74)							0.18** (2.01)		0.29 (1.65)	0.88	
	1991-2000	-0.07* (-1.91)								0.04 (0.62)				0.35*** (3.81)		0.61*** (3.18)	0.81	
DPT Immunization Rate (MMUDPT)	1991-2000			0.06** (2.39)			0.08 (1.30)							0.42*** (4.86)		0.59*** (3.32)	0.84	
	1991-2000			0.05* (1.86)				0.21** (2.08)						0.35*** (2.91)		0.81*** (3.22)	0.87	
	1991-2000	-0.06* (-1.73)								0.17** (2.13)	-0.13* (-1.93)			0.45*** (3.85)		0.51** (2.46)	0.87	
Mortality Rate, Children Under 5 (MORT5)	1991-2000	-0.07** (-2.52)					0.04 (0.86)							-0.53*** (-4.25)		-0.51*** (-3.28)	0.99	

Note: *, **, *** refer to the significance level of 10 percent, 5 percent and 1 percent, respectively. The constant terms are omitted from the table.

Table 4. Long-Term Relationship between Social Indicators, Economic Policy Variables, and IMF

	Education Expenditure				Per Capital GDP		Political Risk	IMF_D	R ²	
	EDU_PUB	EDUT_PUB	EDU\$_PUB	EDUT_PUB x IMF_D	PCAPPPP	PCAPPPP x IMF_D	POLRISK	Dummy IMF_D		
Youth Illiteracy Ratio (ILLITE_YOU)	0.02(0.32)				-0.78***(-5.08)		0.04(0.16)		0.98	
		-0.12(-0.71)			-0.83***(-4.08)		-0.03(-0.07)		0.98	
			0.05(1.03)		-0.81***(-5.40)		0.04(0.17)		0.98	
	0.01(0.26)				-0.79***(-5.22)		-0.02(-0.07)	-0.12*(-1.92)	0.98	
		-0.12(-0.74)			-0.80***(-4.11)		-0.17(-0.43)	-0.21**(-2.40)	0.98	
			0.04(0.94)		-0.81***(-5.48)		-0.01(-0.04)	-0.11*(-1.68)	0.98	
Adult Illiteracy Ratio (ILLITE_ADU)	0.01(0.25)				-0.79***(-5.01)	-0.02**(-2.13)	-0.02(-0.08)		0.98	
		-0.12(-0.73)			-0.79***(-4.04)	-0.03**(-2.43)	-0.79***(-4.04)		0.98	
			0.04(0.95)		-0.81***(-5.46)		-0.01(-0.06)		0.98	
	0.02(0.65)				-0.46***(-4.85)		-0.16(-1.09)		0.98	
		-0.06(-0.60)			-0.49***(-4.28)		-0.14(-0.64)		0.99	
			0.03(0.99)		-0.48***(-5.36)		-0.16(-1.14)		0.99	
Pupil-Teacher Ratio (PTRATIO)	0.02(0.59)				-0.46***(-4.95)		-0.19(-1.29)	-0.06*(-1.66)	0.98	
		-0.06(-0.63)			-0.47***(-4.28)		-0.21(-0.96)	-0.10*(-1.99)	0.99	
	0.02(0.58)				-0.46***(-4.95)	-0.01*(-1.91)	-0.20(-1.31)		0.98	
		-0.06(-0.62)			-0.47***(-4.23)	-0.01**(-2.05)	-0.21(-0.95)		0.99	
	-0.07(-1.25)				-0.15*(-1.97)		0.03(0.22)		0.81	
		-0.20**(-2.43)			-0.12(-1.31)		-0.05(-0.24)		0.81	
School Enrollment Ratio (SCHPRI)			-0.005(-0.14)		-0.16**(-1.99)		0.03(0.23)		0.81	
	-0.006(-0.20)				0.16**(2.14)		0.29**(2.20)		0.94	
		-0.05(-0.68)			0.08(0.89)		0.28(1.52)		0.96	
			0.03(1.15)		0.14*(1.93)		0.28**(2.14)		0.94	
	0.01(0.24)				0.36*** (3.76)		0.01(0.24)		0.94	
		-0.19**(-2.04)			0.41*** (3.45)		0.32(1.22)		0.96	
Female School Enrollment Ratio (SCHPRIWO)			0.04(1.23)		0.34*** (3.50)		0.34*(1.96)		0.94	
	Health Expenditure				Per Capital GDP		Political/ Social Risk	IMF Dummy	R ²	
	HEAL_PUB	HEALT_PUB	HEAL\$_PUB	HEALT_PUB x IMF_D	PCAPPPP	PCAPPPP x IMF_D	POLRISK	IMF_D		
	Measles Immunization Rate (IMMUMEAS)	0.10(0.60)				0.23*** (2.88)		0.93*** (4.64)		0.77
			0.20*(1.82)			0.44*** (3.24)		0.62*(1.91)		0.92
				0.06(1.16)		0.21** (2.13)		0.97*** (4.64)		0.83
		0.56*** (2.80)		-0.40*(-2.01)	0.27*(1.86)	0.09(1.64)	0.58*(1.85)		0.93	
0.17** (2.17)					0.33*** (3.01)		0.86*** (3.79)		0.84	
		0.19(1.39)			0.43** (2.57)		0.57(1.37)		0.87	
DPT Immunization Rate (IMMUDPT)			0.02(0.39)		0.38*** (3.04)		0.96*** (4.11)		0.87	
	0.37(1.45)				1.14*** (3.03)		0.27(0.35)		0.93	
		0.27(0.60)			1.43*** (2.74)		0.29(0.22)		0.92	
			-0.22*(-1.99)		1.50*** (4.42)		0.70(1.56)		0.97	
			-0.02(-0.87)		0.20*** (4.69)	-0.01*(-1.78)	0.02(0.38)		0.94	
			-0.02(-0.86)		0.19*** (4.62)		0.19*** (4.62)	-0.03*(-1.78)	0.94	
Life Expectancy (LIFE)	0.02(0.89)				0.18*** (4.94)		0.01(0.23)		0.94	
		0.08(1.61)			0.16** (2.65)		0.18(1.62)		0.95	
			-0.01(-0.39)		0.19*** (4.42)		0.02(0.30)		0.94	
	-0.06(-1.17)				-0.39*** (-4.62)		-0.30** (-2.60)		0.98	
		-0.23** (-2.45)			-0.44*** (-3.39)		-0.61*** (-3.33)		0.99	
			-0.01(-0.20)		-0.41*** (-4.25)		-0.32*** (-2.79)		0.98	
Mortality Rate, Children Under 5 (MORT5)	-0.08(-1.31)				-0.24(-1.59)		-0.24(-1.59)		0.99	
		-0.29** (-2.38)			-0.52*** (-2.73)		-0.37(-1.26)		0.99	
			-0.04(-0.98)		-0.36*** (-3.15)		-0.32** (-2.23)		0.99	

Note: *, **, *** refer to the significance level of 10 percent, 5 percent and 1 percent, respectively. The constant terms are omitted from the table.

Table 5. Summary Estimation Results: Linkages Between Social Indicators and Economic/Political Risk Variables Including World Bank-Related Variables

ANNUAL DATA ANALYSIS:		Explanatory Variables								R ²
Dependent Variables	WBDS\$	Education Expenditure				Per Capita GDP		Political Risk		
		(% of GDP)	(% of Total Exp.)	1st Lag	(US\$ Per Capita)	1st Lag	(PPP)	1st Lag	POLRISK	
		EDU_PUB	EDUT_PUB	EDUT_PUB(-1)	EDU\$_PUB	EDU\$_PUB(-1)	PCAPPPP	PCAPPP(-1)	POLRISK	
Adult Illiteracy Ratio (Illite_Adu)	1991-2000	0.02**(2.45)				-0.09***(-3.63)		-0.29***(-3.58)	-0.01(-0.15)	0.99
Primary School Enrollment Ratio (SCHPRI)	1991-2000	0.02*(1.75)			0.12(1.57)			0.07(0.84)	0.14(1.13)	0.99
		Health Expenditure								R ²
	WBDS\$	HEAL_PUB(-2)	HEALT_PUB(-2)		HEAL\$_PUB	HEAL\$_PUB(-1)	PCAPPPP	POLRISK		
Immunization, Measles (IMMUMEAS)	1991-2000	0.07***(3.53)	0.15***(2.78)				0.33***(4.43)		0.38**(2.32)	0.82
	1991-2000	0.08***(3.11)		0.24**(2.28)			0.33***(2.71)		0.65**(2.40)	0.85
	1991-2000	0.08***(3.73)			0.05(0.84)		0.36***(3.88)		0.49**(2.61)	0.85
Immunization, DPT (IMMUDPT)	1991-2000	0.06***(3.02)	0.15**(2.40)				0.42***(4.90)		0.50***(2.85)	0.84
	1991-2000	0.06**(2.51)		0.24**(2.27)			0.38***(3.07)		0.67**(2.53)	0.86
	1991-2000	0.07***(3.01)			0.17**(2.35)	-0.16***(-2.65)	0.54***(4.57)		0.28(1.47)	0.92
LONG-RUN ESTIMATES:		Explanatory Variables								R ²
	WBDS\$	(% of GDP)	(% of Total Exp.)		(US\$ Per Capita)		(PPP)		POLRISK	
		EDU_PUB	EDUT_PUB		EDU\$_PUB		PCAPPPP		POLRISK	
Youth Illiteracy Ratio (ILLITE_YOU)		0.07**(2.08)		-0.01(-0.13)			-0.88***(-5.75)		-0.04(-0.16)	0.98
		0.14**(2.37)				-0.23(-1.26)	-0.93***(-4.58)		-0.28(-0.69)	0.98
		0.07*(1.94)			0.02(0.54)		-0.88***(-5.78)		-0.04(-0.18)	0.98
		0.04**(2.00)	0.01(0.15)				-0.52***(-5.70)		-0.20(-1.47)	0.98
Adult Illiteracy Ratio (ILLITE_ADU)		0.07**(2.04)				-0.12(-1.20)	-0.53***(-4.65)		-0.27(-1.20)	0.99
		0.04*(1.91)			0.01(0.40)		-0.52***(-5.74)		-0.20(-1.49)	0.99
School Enrollment Ratio (SCHPRI)		0.05**(2.16)				-0.04(-0.63)	0.04(0.50)		0.22(1.21)	0.95
Female School Enrollment Ratio (SCHPRIWO)		0.08**(2.39)				-0.20**(-2.02)	0.37***(3.11)		0.22(0.87)	0.94
		Health Expenditure								R ²
	WBDS\$				HEAL\$_PUB		PCAPPPP		POLRISK	
Numer of Physicians per 1000 (PHYSICIAN)		-0.12*(-1.97)				-0.09(-0.64)	1.46***(4.35)		0.69(1.57)	0.96

Note: *, **, *** refer to the significance level of 10 percent, 5 percent and 1 percent, respectively. The constant terms are omitted from the table.

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ⁱⁱ The 77 countries include Afghanistan, Albania, Angola, Armenia, Azerbaijan, Bangladesh, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Democratic Republic of Congo, Republic of Congo, Cote d'Ivoire, Djibouti, Dominica, Eritrea, Ethiopia, The Gambia, Georgia, Ghana, Grenada, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, India, Kenya, Kiribati, Lesotho, Liberia, F. Y. R. Macedonia, Madagascar, Malawi, Maldives, Mali, Mauritania, Moldova, Mongolia, Mozambique, Myanmar, Nepal, Nicaragua, Niger, Nigeria, Rwanda, Pakistan, Samoa, Sao Tome and Principe, Senegal, Sierra Leone, Solomon Islands, Somalia, Sri Lanka, St. Lucia, St. Vincent and the Grenadines, Sudan, Tajikistan, Tanzania, Togo, Tonga, Uganda, Vanuatu, Vietnam, Republic of Yemen, Zambia, and Zimbabwe.

ⁱⁱⁱ Income (or consumption) measures of poverty are subject to various problems (World Bank 2001). For example, survey design varies between countries and over time, which makes comparisons difficult. Converting the information on income or consumption collected in household surveys into measures of well-being requires many assumptions related to measurement errors, household size, and composition.

^{iv} Nonincome poverty measures face several problems as well (World Bank 2001). For example, some measures (e.g., infant and under-five mortality rates) are interpolated and extrapolated based on observed trends and models for the period between censuses or surveys. Other measures (e.g., life expectancy) are not directly measured. Some education measures (e.g., school enrollment rate) suffer from conceptual shortcomings and often use actual school attendance.

^v In some cases, such an analysis was not possible due to insufficient data.