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MACROECONOMIC POLICIES AND POVERTY: THE STATE OF PLAY AND A RESEARCH AGENDA

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Abstract: This paper provides an overview of research on the links between macroeconomic policies and poverty, and seeks to identify the various channels through which macroeconomic policies can affect poverty. Using the Human Development Index as a measure of well-being, the progress made by 100 countries over the 1975-98 period is presented, and its association with macroeconomic factors is explored. Given the rudimentary nature of research in this area, several avenues for future research are also outlined.

Keywords: Macroeconomic policies; poverty; income distribution; IMF

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I. INTRODUCTION

The links between macroeconomic policies and poverty are complex. There is little guidance in the vast literature on poverty on how to think about the direct impact of macroeconomic policies on the poor. Given the dearth of theoretical work, the empirical work is still at a rudimentary stage. Lack of data, particularly in poor countries, further hinders high quality research. More recently, attempts at cross-country work are being made but are subject to various criticisms, as highlighted in Srinivasan (2000). The only systematic evidence that exists is regarding the poverty-reducing effects of economic growth, and, to some extent, the beneficial impact of lowering inflation and freeing trade regimes. But, in all these areas, the magnitude of the effects has varied widely across countries and across time in the same countries. While reducing poverty has become a new global mantra, the challenge facing the world community looms large, with the specifics of how to spread the fruits of economic progress leaving room for a wide research agenda.

Recognizing the complexity of the relationships and the political economy aspects of reform programs, the role of the state is being redefined by the world community. The new consensus is that public policy will now be formulated with active participation from different sections of society. This is done not only to ensure popular support for each country's economic programs, but also to provide a more level playing field for the poorest sections of society, by removing the structural, cultural and structural impediments to pro-poor economic development. In other words, a one-for-one response from growth to poverty cannot be taken for granted a priori, but appropriate conditions (such as ensuring that exchange rates are not overvalued, easing constraints on domestic credit markets, reducing labor market distortions, building human capital, and increasing access to trade markets) need to be created for the poor to benefit from growth and also for growth rates to rise and be sustained.

This paper is organized as follows. Section II conducts a survey of the literature on macroeconomic policies, macroeconomic adjustment and poverty, up to the start of the new emphasis on participatory processes at the end of the 1990s. Section III gives a preliminary look at the data, to ascertain the relationship between macroeconomic policies and improvements in well being. The analysis focuses on a United Nations Development Program (UNDP)-developed measure of well-being, the Human Development Index (HDI). In particular, this section examines the extent, and causes of, changes in the HDI of individual countries between 1975 and 1998. Section IV discusses ongoing research on poverty-related issues at the International Monetary Fund (IMF), which it is mandated to provide to its member countries on the effects of macroeconomic policies. It also discusses the possible links between macroeconomic policies and poverty, and suggests areas of potential future research. Section V contains some concluding comments.

II. RESEARCH ON MACROECONOMIC POLICIES, MACROECONOMIC ADJUSTMENT AND POVERTY: THE STATE OF PLAY²

The consequences of macroeconomic policies for the welfare of the poor and on the distribution of income are issues attracting increasing interest from both economists and policymakers. While most analyses of poverty and inequality have been microeconomic in nature, there is an increasing recognition that macroeconomic policies and macroeconomic stabilization programs can have important effects on both the distribution and level of incomes.

The literature on the relationship between macroeconomic policies and poverty is gradually evolving away from an emphasis on the strong link between economic growth and poverty reduction to explore what policies, beyond growth itself, contribute to both poverty reduction and improvements in the distribution of income. This line of research explores whether macroeconomic imbalances (such as excessive fiscal and balance of payments deficits, large debt and debt servicing costs, and high inflation) have implications for poverty beyond those they exert on economic growth.

The consequences of Fund- and World Bank-supported adjustment programs for income distribution and on the poor have been of interest, particularly in the wake of the severe economic crises experienced by many countries in the 1990s. In examining the effects of macroeconomic adjustment on real incomes, the main theoretical model utilized has been the dependent economy model. In addition, several analyses of the actual effects of adjustment programs on income distribution and poverty exist to complement the large literature which compares the relative economic performance of countries which do and do not undertake macroeconomic adjustment programs.

Macroeconomic instability (characterized by rising debt-servicing costs, adverse terms of trade shocks, high inflation, large fiscal and external imbalances) generates an unsustainable excess of aggregate demand over aggregate supply. To restore macroeconomic balance, countries undertake (in conjunction with the Fund and/or the World Bank) macroeconomic adjustment programs. As noted by Lipton and Ravallion (1995), the case for adjustment programs depends on demonstrating that the present social value of the future sequence of consumptions is greater with adjustment than without.

In this context, the workhorse dependent economy model (which assumes a constant terms of trade) is a useful means to highlight the likely welfare impacts of structural adjustment on real incomes, and particularly the incomes of the poor. In response to excess aggregate demand, to restore internal and external balance the price of nontraded goods must decrease relative to traded goods (a real devaluation), and domestic absorption needs to fall (typically

² Parts of this section draws upon some initial IMF-related work conducted by Catherine Pattillo, Ratna Sahay, Antonio Spilimbergo, and Saji Thomas.

through lower domestic consumption and net public expenditures). Given that the poor possess labor and are mobile across the traded and nontraded goods sectors, then the Stolper-Samuelson theorem would predict that returns to the abundant factor (labor) will rise. Lipton and Ravallion (1995) point out that this will occur if (and only if) the traded goods sector is more labor-intensive than the nontraded goods sector. This seems a plausible assumption for most developing countries, which have a comparative advantage in the production of labor-intensive products. Accordingly, the poor should gain as their real wage (in terms of nontraded goods) will rise with structural adjustment.

Important caveats to this beneficial effect of adjustment on the poor concern: the pattern of fiscal consolidation, particularly if spending cuts target programs which benefit the poor; and the rise in traded goods prices (particularly for food staples), which may adversely affect the urban poor (as net consumers) even as they benefit the rural poor (as net producers). The existing consensus appears to be that while the view that structural adjustment (relative to non-adjustment) is uniformly bad for the poor is overdrawn, it is true that the speed of supply-side response to adjustment (as embodied in the dependent economy model) may also have been overestimated for many developing countries.

1. Poverty, Income Inequality, and Economic Growth

One possible link between macroeconomic policies and poverty may well be indirect. Good macroeconomic policies lead to higher growth, and higher growth in turn lead to poverty reduction. There is sufficient evidence that supports the former premise, particularly over the long run: good macroeconomic policies, if sustained, lead to higher growth rates for countries at the same level of economic development. We do not report on this strand of the literature here, as it is quite vast and would detract from the issue at hand.

Regarding poverty and growth, the theoretical literature has explored the relationship between relative concepts of poverty (income distribution) and growth. Interestingly, researchers have still not developed a framework for thinking about the links between absolute poverty levels and income growth. On the empirical side, however, there are several studies that exist, particularly country cases. More recently, cross country data are being used to understand this link. These studies have generally found a strong positive association between income growth and income measures of poverty.³ An important question is the elasticity of this relationship, or the extent to which the poor benefit from growth. One approach is that of Ravallion and Chen (1997), which uses data from developing and transition countries where at least two household surveys are available, and finds an elasticity of poverty reduction (proportion of population living on less than 50 percent of the mean) to growth in average consumption of 2.6. Similarly, Roemer and Gugerty (1997) and Dollar and Kraay (2000) use aggregate data and find that a one percent rise in per capita income is correlated with a one percent increase in the income of the poorest quintile.

³ See Srinivasan (2000) for an assessment of the links between growth, poverty alleviation and income inequality.

However, there are not many papers debating the large variation across studies on evidence on the elasticity (see also Timmer (1997), Hamner and Naschold (1999), Bruno *et. al* (1998)). Many of these studies also employ different types of data, methods, definitions of poverty and the relevant income or consumption growth variable, making comparisons difficult. For example, Lipton and Ravallion (1995) reference individual country studies where elasticities of the poverty gap (a measure of poverty intensity) with respect to growth in mean consumption range from 1.5 to 4.1. They note that since poverty headcount (compared to poverty gap) elasticities tend to be lower, this suggests that the growth-induced benefits of poverty reduction are felt well below the poverty line. Ravallion (1997) also finds higher elasticities for lower poverty lines.⁴

The *World Development Report 2000-01* points out several qualifications and extensions to the growth-poverty nexus. First, there is large variation in the statistical relationship between national per capita income growth and poverty measures. Given this wide variance in outcomes, many authors point out that the interesting policy question is not the connection of the poor to economic growth on average, but to understand the role of policy and economic structure in countries that have and have not been successful in turning growth into poverty reduction. In other words, both growth and poverty are possibly affected by a third set of factors that we do not yet fully understand.

What explains some of these different cross-country patterns in the relationship between growth and poverty? One important factor is the sectoral pattern of growth. There is some evidence from individual country studies that agricultural sector growth has the largest effect on poverty reduction (see Datt and Ravallion (1998) on India; Thorbecke and Jung (1996) on Indonesia). While Lipton and Ravallion (1995) agree that the balance of evidence supports a correlation between high and growing farm output and falling rural poverty (see also Bourginon, Berry and Morrison (1998)), they note that an empirical debate on this issue continues, both for particular country cases and in general.

Most recent research has found no systematic global relationship between growth and inequality, either when specifically testing the Kuznets hypothesis (Anand and Kanbur (1993), Deininger and Squire (1998)) or in other analyses (Ravallion and Chen (1997), Kanbur and Lustig (1999), Li, Squire and Zou (1998), and Bruno *et. al* (1998)). If the distribution of income does not change during the growth process, the extent of poverty reduction during growth will depend on the extent of initial inequality. A number of studies (Ravallion (1997), Timmer (1997)) have shown higher growth elasticities of poverty reduction in countries with lower Gini indices (that is, a more equitable income distribution). Clearly, the nature of the growth-poverty relationship becomes more complex if inequality changes during the growth process.

⁴ There appears to be little systematic work on the differences in growth elasticities of headcount, poverty gap, and squared poverty gap measures of incidence and intensity.

While there may be no significant relationship, on average, between income inequality and growth, there appear to be large variation in experience across countries: the same growth rate is associated with very different patterns of inequality change in different countries, which could explain some of the variation in poverty reduction for given growth rates, although this has not been systematically explored. Using survey data, Bruno *et. al* (1998) find that rates of poverty reduction respond even more elastically to rates of change in the Gini index than they do to the mean index, indicating that even modest changes in inequality can lead to sizable changes in poverty incidence.

The poor are also hurt by high initial income inequality if more unequal countries grow more slowly, lowering the potential for growth to reduce poverty. Deininger and Squire (1998) find a strong negative relationship between initial real assets (distribution of land) and long-term growth, and that inequality reduces income growth for the poor but not the rich. Most other studies use data on income inequality and currently there is no consensus on whether empirically there is a positive or negative link from initial income inequality to growth (see Banerjee and Duflo (1999)).

2. Inflation and the Poor

The literature on the relation between inflation and poverty has generally found that there is a significant association between improvements in the well being of the poor and lower inflation (Easterly and Fischer (2001)). Using panel data on a range of developed and developing countries, Romer and Romer (2000) echo this result in finding that inflation tends to be inversely-related to increases in the income of the relatively poor (as measured by the income share of the poorest quintile), chiefly through the pro-growth effects of low inflation. While earlier research by Cardoso (1992) found that the poor of Latin America were relatively unaffected by inflation due to their meager holdings of cash, their real wages were adversely affected by higher inflation (given the rigidity of nominal wages).

3. Trade Liberalization and Poverty

While there is extensive research on trade liberalization's impact on income distribution, the direct links between absolute poverty and trade reform are only beginning to be explored. Winters (2000) sets out an analytical framework for tracing the channels of impact on individuals and households through changes affecting enterprises (including wages and employment), distribution (price changes and markets), and government (taxes and spending). Viewing trade reform broadly as including accompanying domestic market liberalization, Winters suggests that the following factors matter: the creation or destruction of markets where the poor participate, the intra-household effects, the extent of concentration of spillovers on areas/activities of relevance to poor, intensity of factors of production in most affected sectors and their elasticity of supply, effect on taxes paid by poor and government revenue, and whether transitional unemployment will be concentrated on the poor.

As to empirical work, Winters (1999) summarizes research on trade liberalization and poverty in Africa (Zambia and Zimbabwe) and South Asia (India and Bangladesh). Field studies in the two African countries found that following domestic deregulation of cash crop purchasing, poverty rose from market failure as private markets did not develop in some areas. In South Asia, the labor market studies found that market segmentation prevented benefits of liberalization from spreading as widely as possible, and that trade liberalization had uneven effects within households.

4. Poverty and External Debt

Both in the development of, and modifications to, the HIPC (Heavily Indebted Poor Countries) initiative, much has been written by the IMF, World Bank and NGOs on strengthening the link between debt relief and poverty reduction. The focus has been on developing comprehensive poverty reduction strategies, and in designing adjustment programs to effectively use resources freed up from debt service for the task of poverty reduction. A key point recognized is that the extent to which increased education and health care spending improves social indicators is dependent on how efficiently the funds are spent and how well they are targeted to the poor (IMF (2000), Box. 4.3, Gupta *et. al* (1998)). However, an important caveat is that to the extent that HIPCs were not servicing some of their debts, debt relief will not provide additional fiscal resources. While lower debt-service payments on existing borrowings should contribute to spending on poverty-reduction, new loans and grants are expected to provide the bulk of total resources for that purpose. Accordingly, while it is important to prioritize the allocation of all available resources in line with poverty reduction targets, there is little research that helps policy makers to decide on the order of prioritization.

There appears to be little work on the direct relationship between external debt and poverty, including the following questions: (i) Does high debt increase poverty, and if so, how? (ii) What is the incidence of poverty in heavily indebted countries—is there a positive correlation between poverty incidence and debt burdens? (iii) How would an aid allocation geared to meet some poverty reduction criteria differ from an allocation to achieve debt sustainability? (iv) Have countries that have been more successful in improving debt sustainability without debt relief been better or worse than other countries at reducing poverty? (v) What do we know about the relationship between sustainable fiscal deficits, debt sustainability, and poverty?

5. Macroeconomic Adjustment and Poverty

The *World Development Report 2000-01* summarizes country case studies showing macroeconomic crises tend to be associated with increases in income poverty, and often with increases in inequality (see also Lustig (1999)). An important issue raised in this context is whether poverty arising during the transition leads to chronic poverty even after the economic crisis has passed. It is argued, though not well supported, that since crises are often associated with increases in inequality, crises reverse previous poverty reduction gains proportionally more. In contrast, in a cross-country context Dollar and Kraay (2000) find no difference in the growth-poverty relationship during periods of negative growth (crisis) episodes and periods of positive growth, and so conclude that crises do not affect the income of the poor disproportionately.

Further, there appears to be little or no research so far exploring how or why the extent of worsening poverty differs across crisis-hit countries. Key questions that are just beginning to be asked, though not necessarily examined, include: (i) Do certain types of macroeconomic policies associated with crises have a relatively greater negative impact on the poor than others? (ii) Do macroeconomic responses to crises that are optimal for the poor differ from responses that are optimal for the economy as a whole? (iii) What are the most important elements of a pro-poor crisis response? (iv) What types of safety nets set up before a crisis hits are the most effective in protecting the poor during a crisis? (see also Ferreira *et. al* (1998), and Lustig (1999)).

6. Fund Programs and Poverty

There has been an ongoing debate regarding the effects of IMF programs on the welfare of low-income groups in program countries. In recent times, a renewed interest has been spurred by the Fund's high-profile involvement in economic crises affecting Indonesia, South Korea, Pakistan, Brazil and Russia. Critics of Fund programs argue that the fiscal consolidation, cuts in domestic absorption and real devaluation typically recommended to restore both internal and external balance have adverse effects on the poorest segments of program countries. Supporters of Fund activities respond that its programs assist in macroeconomic stabilization and the restoration of international capital flows, which boost both economic growth and the welfare of the poor.

While studies of the macroeconomic effects of Fund programs (on growth, inflation, and balance of payments, for example) have been quite abundant, studies of the distributional effects of Fund programs have been rare, with the exception of recent work by Garuda (2000).^{5 6} In examining 58 IMF programs over the period 1975-91, he finds that there is

⁵ Work by Conway (1994), for example, finds evidence that Fund programs are associated with real depreciation, smaller fiscal imbalances, lower economic growth and lower public investment. Later work by Dicks-Mireaux *et. al.* (2000) finds that IMF lending to low-income
(continued...)

evidence of a significant deterioration in the distribution of income (as measured by Gini coefficients) and in the income of the poor (as measured by the income share of the lowest quintile), in the two years following the initiation of a Fund program. This deterioration is most marked in countries with large external imbalances in the pre-program period. However, when pre-program external imbalances are not large, countries participating in Fund programs generated improved distributional and income results relative to non-program countries.

Of the four main channels by which Fund programs could have beneficially affected poverty and the distribution of income: currency devaluation (lowering the price of nontradables relative to tradables), shrinking of fiscal imbalances, increases in growth rates and falls in inflation rates, Garuda (2000) finds that real depreciation of the currency is the most plausible mechanism by which Fund programs assist the poor. Easterly (2000) also finds that World Bank and IMF adjustment lending is closely associated with a more depreciated real exchange rate. Real devaluation assists the rural, farm-based poor by raising the domestic-currency value of agricultural goods—the reverse effect would occur for food-consuming urban poor. To the extent that the bulk of poverty is rural based, and labor-intensity of production is greater for the tradables sector than the nontradables, then overall poverty can be reduced through the exchange rate channel.

Using data from household consumption surveys for a group of African countries, Demery and Squire (1996) find that those countries which implemented effective World Bank and IMF reform programs generated declines in overall poverty; those that implemented ineffective reforms programs generated increases in overall poverty. As with Garuda (2000), they find that real exchange rate depreciation is a key component of a successful, poverty-reducing adjustment strategy, through its beneficial effect on export-led economic growth, its changing the structure of production in favor of labor-intensive agriculture (which employs the majority of the poor), and the reduction of rents earned (through import quotas and exchange controls) by urban households. The important message is that the maintenance of overvalued exchange rates hurts the poor.⁷

countries has raised output growth and improved debt sustainability, yet with no significant effects on inflation.

⁶ Earlier work by Pastor (1987) found that the initiation of a Fund program reduced the income share of labor relative to both pre-program levels and in comparison with non-program countries, which is indicative of a worsening distribution of income, given that the poor typically possess much labor and little capital.

⁷ See also the findings of Sahn et.al. (1996), derived using household survey data on 10 African countries during the 1980s. They find that real devaluation, fiscal policy reform and agricultural market liberalization commonly part of IMF and World Bank adjustment programs have improved the distribution of income and not adversely affect the poor.

(continued...)

These results are broadly consistent with analyses conducted by the Fund itself as to the consequences for poverty and income inequality of IMF-supported programs. In IMF (1986), the experience of programs in 94 countries in the 1980s indicated that the effect on poverty and income distribution varied with the composition of programs. Poverty-reducing and distribution-improving measures included real devaluation, elimination of exchange controls, expanded access to credit markets, the widening of the tax base to property and income taxes and the switching of expenditures to basic health and education. Measures that had the reverse effect included increases in indirect taxes, such as customs duties and value-added taxes, and the erosion of expenditures on social safety nets.

III. A PRELIMINARY LOOK AT THE DATA

Indicators of well-being have improved in the vast majority of countries over the past few decades, though with major variation both within countries and across countries. A well-known composite indicator of well-being is the UNDP's Human Development Index (HDI, Figure 1), which is defined as the arithmetic average of a country's achievements in three basic dimensions of human development. These include longevity (measured by life expectancy at birth); educational attainment (measured by a combination of the adult literacy rate and the enrolment ratio in primary, secondary and tertiary education); and living standards (measured by GDP per capita in U.S. dollars at purchasing power parity).

This index is highly correlated with other commonly-known poverty measures. A measure which is closely-related to the HDI and yet directly focused on measuring poverty is the UNDP's Human Poverty Index (HPI).⁸ The rank correlation (for the 80 developing countries where both indices exist) between the HDI and the HPI for 1998 was extremely high at 0.94. Figure 2 details the high correlation between the two indices, both for all 174 (developed and developing) countries and for the 80 low- and medium-HDI developing countries, along with

However, these policies did not result in the rapid economic growth, which might have further aided poverty alleviation, due to the poor implementation of adjustment policies.

⁸ While the HDI measures the overall progress in a country in achieving human development, the HPI measures the distribution of that progress. Introduced in the *Human Development Report 1997*, the HPI is a multidimensional measure of poverty which attempts to capture deprivation in four key areas: deprivation in a long and healthy life (as measured by the percentage of people alive today not expected to reach age 40); deprivation in knowledge (measured by the adult illiteracy rate); and deprivation in economic provisioning (measured by the percentage of people lacking access to safe water and health services, and the percentage of children under 5 years who are underweight). The HPI is formed as a simple average of these three component indices (see UNDP (2000)).

linear (Figures 2a and 2c) and log linear (Figures 2b and 2d) regression results.⁹ Figure 3 also shows the close relationship (using data for 1990 and 1998) between the HDI and a World Bank measure of poverty—the share of the population with income less than \$1 or \$2 per day.¹⁰ Interestingly, even when a relative measure of poverty—the Gini coefficient (Figure 4)—is used for comparison, we find a clear negative relationship between inequality of income and the HDI.

The HDI also has a number of advantages: it moves beyond per capita income alone as a measure of well-being; it is compiled with uniform data sources and methodology over time and across countries; and it is available for 100 countries on a consistent basis over the period 1975-98.¹¹ The HDI does not capture income inequality directly. However, for a given per capita income, countries where income is distributed more evenly will tend to display higher average longevity and educational attainment, and therefore a higher HDI, because of the obvious limits to longevity and educational attainment faced by individual people. The HDI ranges between zero (low human development) and one (high human development), and its distribution is non-normal: it is skewed with a relatively long left-sided tail, that is, with the median HDI exceeding the mean HDI.

Table 1 provides a complete list of all the countries (a total of 174 countries for which data were available), categorized by regions, and in descending order of their HDI in 1998. In general, the African and Asian countries had low HDI, while industrial, transition, and Latin American countries had relatively high HDI. The HDI improved in all countries (with the exception of Zambia) between 1975 and 1998—the median value of the HDI in 1998 (0.73) was significantly higher than in 1975 (0.62). At the same time, there was little change in the ranking of countries by HDI over this period—the cross-country rank correlation between the 1975 and the 1998 observations is 0.98. While there was a significant difference in the underlying distribution of HDI between 1975 and 1998, this was largely caused by the significant rise in the median HDI (Figure 1). In contrast, there was no significant difference in the cross-country variance of the HDI between 1975 and 1998. While there is an upsurge in high-HDI countries in 1998 that were not present in 1975, this is offset by the

⁹ The UNDP classifies countries into three clusters by achievement in human development: high human development (with an HDI measure between 0.8 and 1.0 (these are largely industrialized countries)); medium human development (an HDI between 0.5 and 0.8); and low human development (an HDI less than 0.5).

¹⁰ See Deaton (2000) for a description of the use of different methodologies used to count the world's poor.

¹¹ While the method of derivation of the HDI has changed several times since its introduction, making comparisons across time difficult, the *World Development Report 2000-01* contains a consistent series for the 1975-98 period, using the latest definition of the components of the HDI.

disappearance by 1998 of many of the low-HDI countries which were commonly found in 1975.

Since the total number of countries reported in 1998 is significantly higher than in 1975 (174 countries versus 100 countries), to facilitate comparison, we present the distribution for the same 100 countries for which data were available in 1975 (Tables 2) and in 1998 (Table 3). Again, there is a clear trend of movement from lower ranges to higher ranges: the total number of countries in the two lower ranges fall from 65 to 43, while that in the upper ranges rises from 35 to 57, with the highest range scoring the maximum number of countries by 1998. While all African countries (except Zambia) had improved during this period, it is noteworthy that none had a HDI of greater than 0.8 by 1998.

Tables 4a and 4b show the movement of countries (or the lack thereof) from one HDI range to another. No countries regressed (when ranges are considered) during 1975 to 1998, in that no countries moved from a higher range to a lower range. When movement in the lowest range (0.22–0.50) is considered, it is interesting to see that more countries stayed in that range than moved out of the range.¹² In contrast, in the next two highest ranges, more countries moved out of their range than stayed in their range. Thus, over time, there seems to have been a divergence in HDI; that is, there is a lack of evidence of a “catching up” in the welfare of low-HDI countries with those in high-HDI countries. However, a different picture emerges when industrial countries are excluded—Tables 5a and 5b look at the movement of low-, medium- and high-HDI countries between 1975 and 1998. The low-HDI countries in 1975 have the greatest absolute change in HDI over the next two decades, while there is less change in HDI the higher the level of the HDI in 1975.

1. Macroeconomic Policies, Human Development and Income Inequality

Poverty in a given country can be reduced by fostering per capita GDP growth, that is, by raising the total resources available to the population, and by increasing the share of those resources going to the poorer segments of that population. Figure 5 confirms the expected positive correlation between economic growth and HDI. A widely held view is that economic growth can be fostered through a set of policies aimed at promoting macroeconomic stability (low and stable inflation, low budget deficits, and sustainable external debt), openness to international trade, education, and the rule of law. A large number of studies based upon cross-country evidence are consistent with that view, although the evidence on whether each

¹² However, when individual countries are concerned, the top five that made the most progress (the maximum change in HDI from 1975 to 1998) are from Africa and Asia: Nepal (0.49), Mali (0.43), Pakistan (0.40), Gambia (0.39), and Chad (0.37). The countries with the lowest change were Switzerland (0.05), Guyana (0.05), Congo (0.03), Romania (0.03), and Zambia (-0.06).

individual policy among those listed above raises economic growth is typically not very robust (Levine and Renelt (1992)).¹³

There is also a debate regarding the policies that improve the well-being of the poorer segments of the population *for a given growth rate of GDP per capita*, and an even more fervent debate about whether certain policies imply a trade-off between increasing total available resources (raising growth rates) and improving their distribution (reducing poverty). In the latter respect, there seems to be broad agreement that policies aimed at improving basic education and health can both raise economic growth and improve distribution, but of course there certainly is no consensus regarding the most effective policies that will raise education and health.

To examine whether macroeconomic policies have a direct impact on poverty, in a cross country framework we attempted to estimate the relationship between economic policies and improvements in the HDI, *for a given rate of growth of GDP per capita*. The rationale is that when policies bring about greater improvement in (for example) life expectancy than would be expected on the basis of the observed rate of economic growth, they are likely to be of particular benefit to the poorer segments of the population. This makes it possible, in principle, to estimate the relationship between policies and that component of the improvement in well-being that is unrelated to economic growth.¹⁴

We examined a very large set of potential explanatory variables related to economic policies. The set included many of the variables that previous researchers have used to analyze the determinants of economic growth (such as inflation and its variance; budget deficits, government spending, and foreign aid as a share of GDP; indicators of openness such as the ratio of foreign trade to GDP and the black market foreign exchange premium; and indices of the rule of law—see Table 6 for a list of potential variables). It also included others that have received less attention in previous work (such as the presence and length of exchange-rate or banking crises; and initial external debt as a share of GDP). In a first pass using a simple OLS cross-country regression framework, we did not find significant and robust evidence that any of these variables are individually associated with pro-poor (or anti-poor) economic growth.

Our next strategy was to attempt to group countries on the basis of their respective *levels* of HDI (as given in Tables 1-3), then distinguish the “fast progressors” from the “slow progressors” within each group, and finally to look at the raw macroeconomic data for each

¹³ Robust evidence is obtained when a variable is significant in a battery of regressions that include several combinations of other potential explanatory variables.

¹⁴ Therefore, our approach was to regress the improvement in the HDI on initial HDI, per capita GDP growth, and average economic policies during the period; and to repeat the exercise using infant mortality and life expectancy instead of the HDI.

group of countries to see if any patterns emerged. The data presented in Table 6 shows a remarkable pattern: in general, countries with sound macroeconomic policies and performance (as presented in this paper) are associated with faster changes in HDI. In other words, lower inflation, lower fiscal deficits, lower government consumption, lower variability of inflation, lower terms of trade shocks, lower external debt, greater degree of openness, more foreign aid, better rule of law, and lower black market premium had made greater strides in improving their HDI. The only two variables where no clear pattern emerged were private capital flows and financial crises. There was no indication that higher private capital flows improved well being, or that countries prone to financial crises suffered greater setbacks in improving their HDI over the longer run. Figures 6a and 6b show bivariate correlations between the explanatory variables and the HDI..

A simple cross-section regression of the change in HDI on the macroeconomic variables, controlling for the low, medium, and high HDI countries (Table 6), explains over 90 percent of the variation in changes in HDI over 1975-98. The regression results are given below (with *t*-statistics in parentheses):

$$\begin{aligned} D_{\text{HDI}}(75-98) = & 0.039*\text{GDP growth} + 0.001*\text{Inflation} + 0.005*\text{Fiscal balance} \\ & (3.03) \qquad\qquad\qquad (0.10) \qquad\qquad\qquad (1.65) \\ & + 0.001*\text{Rule of law} + 0.070*\text{Log difference in terms of trade} \\ & (0.21) \qquad\qquad\qquad (1.92) \\ & - 0.001*\text{External debt} - 0.001*(\text{Openness}*GDP) + 0.004*\text{Foreign aid} \\ & (-0.63) \qquad\qquad\qquad (-1.31) \qquad\qquad\qquad (1.71) \\ & + 0.088*\text{High HDI75} + 0.192*\text{Middle HDI75} + 0.272*\text{Low HDI75} \\ & (1.94) \qquad\qquad\qquad (6.34) \qquad\qquad\qquad (9.93) \end{aligned}$$

(Number of observations = 57; R-squared = 0.92; Adjusted R-squared = 0.91).

When all macroeconomic factors are considered simultaneously, fiscal balance, terms of trade, and foreign aid are the only ones that are significant with the expected sign.

2. Government Spending and Poverty

We then looked at government balances in somewhat greater detail. The conventional wisdom is that certain policies, such as spending on education and health, tend to help the poor.¹⁵ In fact, the international financial institutions have often encouraged countries not to reduce spending on health and education (at least as a share of total spending, and often also in real per capita terms) at times when fiscal adjustment was needed, and to increase

¹⁵ See, for example, Gupta and others (1998, 1999).

spending on health and education as a share of total spending at times when countries were able to afford increases in overall spending.¹⁶

This section provides a more detailed, systematic analysis of the composition of large government expenditure cuts (or increases), as an illustration of governments' actual behavior with respect to policies that are believed to affect the poor. Considering 179 countries during 1985–98,¹⁷ there are about sixty (non-overlapping) instances in which governments cut total spending by more than 5 percentage points over three years. The share of education spending in total spending and the share of health spending in total spending rose in three quarters of those instances. On average, the share of education spending in total spending increased by 2 percentage points and the share of health spending in total spending increased by 1 ½ percentage points. (By comparison, the average level of education spending and health spending amounted to 13 percent, and 7 percent, respectively, of total spending during the sample period.) Conversely, the share of education spending in total spending and the share of health spending in total spending declined in about two thirds of the roughly thirty (non-overlapping) instances in which governments increased total spending by more than 5 percentage points over three years; in those instances, both education spending and health spending declined, on average, by one percentage point of total spending.

These results suggest that spending on health and education is typically more stable than spending on the remaining items in governments' budgets. Therefore, when governments are faced with the need to cut overall spending, the share of education and health spending is far more likely to rise than to decline. In this light, an unchanged share for education and health does not appear to be an especially ambitious target at a time when overall government spending is being cut. Conversely, a decline in the share of education and health spending at a time when overall spending is increasing may partly reflect the more stable nature of these expenditures.

As this simple example illustrates, there seems to be much scope for research on how governments behave in practice with respect to policies that are widely believed to affect the poor, and that this line of research may help establish more useful benchmarks in assessing the strength of governments' efforts in this domain.

¹⁶ While the international institutions have typically encouraged countries to preserve the share of spending on health and education, this has not been a condition for IMF loans. Consistent with this absence of conditionality, the results presented below are similar if the sample is restricted to those instances involving IMF-supported programs.

¹⁷ The data were drawn from the Expenditure Policy Division in the IMF's Fiscal Affairs Department.

IV. ONGOING FUND RESEARCH ON POVERTY-RELATED ISSUES AND FUTURE RESEARCH AGENDA

Recent research at the Fund has focused on the implications for poverty and income distribution of macroeconomic policies, economic crises and the implementation of Fund-supported macroeconomic adjustment programs. A summary of the major issues, approach and preliminary findings of this research is given below.¹⁸

Several studies use longitudinal microeconomic (household income and expenditure) data to measure the impact on living standards during periods of macroeconomic adjustment and economic crises. Using Polish data, Keane and Prasad (2000) find that while poverty did increase during the economic transition of the late 1980s, social transfers mitigated this increase, and poverty rates declined sharply once faster economic growth occurred. Baldacci, de Mello and Inchauste (2001) use Mexican data in finding that there was an increase in the incidence of poverty (that is, higher poverty headcounts) yet not the depth of poverty (the poverty gap actually falls) during the financial crisis of the mid-1990s. In contrast, results from an analysis of Russian household data before and after the 1998 economic crisis reveal that real household incomes and consumption both fell by about one-third following the crisis, and that households in the upper tail of the consumption (income) distribution suffered the greatest losses during the crisis (Eble and Koeva (2001)).

Some studies use computable general equilibrium models to calculate the economy-wide effects of the expected boost to education and health spending arising from HIPC-related falls in debt and debt servicing. In one study, HIPC relief is found to boost output growth and raise the relative wage of low-skilled workers (see Jung and Thorbeke (2001)). The macroeconomic impact of debt-relief financed government spending is examined using a calibration model of a typical HIPC recipient, revealing that aid conditioned on increased government spending will tend to raise domestic inflation and appreciate the real exchange rate (Burnside and Fanizza (2001)). Other work examines links between models of human capital acquisition and the Harris-Todaro model of rural-urban migration, with the implication that such migration can be driven by the desire for skills acquisition. The economic effects of human capital accumulation are simulated using agent-based models that allow for heterogeneous abilities and imperfect capital markets (Masson (2001)).

Other researchers use calibration models of individual developing economies, in order to examine issues such as the nexus between financial deepening, economic development and inequality (see Townsend and Ueda (2001)). Similarly, the economic consequences of the HIV/AIDS epidemic for the countries of southern Africa have been examined using results derived from the neoclassical growth model (Haaker (2001)). Using three non-income measures of poverty (infant mortality, life expectancy and school enrollment), panel

¹⁸ Many of these papers will be presented at a Workshop on Poverty Reduction and Macroeconomic Policies, to be held at the IMF in April 2001.

estimation techniques and data on 46 countries of Sub-Saharan Africa over the last three decades, the existing consensus that economic growth is robustly related to poverty reduction is confirmed (Moser and Ichida (2001)).

Some recent papers in the Fund and the Bank find that social spending may inefficiently used and poorly targeted.¹⁹ In view of the renewed interest in promoting expansionary fiscal policy to meet social objectives, it is important to understand whether there is indeed a trade off between tight fiscal policies and low inflation in the short-run versus loose fiscal policies and poverty reduction, and if so, to what extent does the quality of government expenditure matters. Further work in this area could usefully examine the effects of pro-poor expansionary fiscal policy on growth, inflation, and poverty and other social indicators. Such studies should look at both short and medium run effects.

V. CONCLUSION

On the basis of systematic cross-country studies, the current state of knowledge is that economic growth is associated with improvements in indicators of well-being. However, little has been conclusively shown regarding those macroeconomic policies that help raise economic growth, and even less is known about the individual policies that help reduce poverty for a given rate of economic growth. Of course, a wide range of country experiences has made it possible for policy makers to accumulate a certain degree of expertise regarding these issues, whose validity nevertheless still needs to be confirmed by systematic empirical studies.

This leaves a very heavy and comprehensive research agenda. Further cross-country studies appear to be less likely to yield much value added regarding the effects of macroeconomic policies on poverty, unless the dynamics effects are appropriately considered in a general equilibrium framework. The greatest payoff for future research in exploring the relationship between macroeconomic policies and poverty is likely to be obtained through studies based on survey data regarding households or firms for one or a few individual countries, around the time of clearly-identifiable macroeconomic shocks. The beginnings of this line of research at the Fund have been outlined above. However, the number of countries for which such reliable surveys are currently available is relatively limited, and data collection efforts in this direction may greatly contribute to our knowledge about the links between macroeconomic policies and poverty.

¹⁹ Gupta et al. (1998, 1999) look at the quality of government expenditure and argue that the extent to which health and education spending improve social indicators depend on how well the funds are targeted to the poor and how efficiently they are used.

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Table 1. Human Development Index (HDI), 1998

HDI	0.22 - 0.50	0.51 - 0.70	0.71 - 0.80	> 0.80
	<u>Africa</u>	<u>Africa</u>	<u>Europe/Industrial Countries</u>	<u>Europe/Industrial Countries</u>
	Madagascar (0.48)	South Africa (0.7)	Turkey (0.73)	Canada (0.93)
	Sudan (0.48)	Cape Verde (0.69)		Norway (0.93)
	Togo (0.47)	Algeria (0.68)	<u>Africa</u>	United States (0.93)
	Mauritania (0.45)	Swaziland (0.66)	Seychelles (0.79)	Australia (0.93)
	Djibouti (0.45)	Namibia (0.63)	Mauritius (0.76)	Iceland (0.93)
	Nigeria (0.44)	Botswana (0.59)	Tunisia (0.7)	Sweden (0.93)
	Congo, Dem. Rep. of the (0.43)	Gabon (0.59)		Belgium (0.92)
	Zambia (0.42)	Morocco (0.59)	<u>Asia</u>	Netherlands (0.92)
	Côte d'Ivoire (0.42)	Lesotho (0.57)	Malaysia (0.77)	Japan (0.92)
	Senegal (0.42)	Ghana (0.56)	Fiji (0.77)	United Kingdom (0.92)
	Tanzania, U. Rep. of (0.41)	Zimbabwe (0.56)	Thailand (0.74)	Finland (0.92)
	Benin (0.41)	Equatorial Guinea (0.55)	Philippines (0.74)	France (0.92)
	Uganda (0.41)	São Tomé and Príncipe (0.55)	Sri Lanka (0.73)	Switzerland (0.92)
	Eritrea (0.41)	Cameroon (0.53)	Maldives (0.73)	Germany (0.91)
	Angola (0.4)	Comoros (0.51)	Samoa (Western) (0.71)	Denmark (0.91)
	Gambia (0.4)	Kenya (0.51)	China (0.71)	Austria (0.91)
	Guinea (0.39)	Congo (0.51)		Luxembourg (0.91)
	Malawi (0.38)		<u>Transition Economies</u>	Ireland (0.91)
	Rwanda (0.38)	<u>Asia</u>	Croatia (0.79)	Italy (0.9)
	Mali (0.38)	Viet Nam (0.67)	Lithuania (0.79)	New Zealand (0.9)
	Central African Republic (0.37)	Indonesia (0.67)	Belarus (0.78)	Spain (0.9)
	Chad (0.37)	Mongolia (0.63)	Bulgaria (0.77)	Greece (0.88)
	Mozambique (0.34)	Vanuatu (0.62)	Russian Federation (0.77)	Portugal (0.86)
	Guinea-Bissau (0.33)	Solomon Islands (0.61)	Latvia (0.77)	Cyprus (0.89)
	Burundi (0.32)	Myanmar (0.58)	Romania (0.77)	Malta (0.87)
	Ethiopia (0.31)	India (0.56)	Macedonia, TFYR (0.76)	
	Burkina Faso (0.3)	Papua New Guinea (0.54)	Georgia (0.76)	<u>Asia</u>
	Niger (0.29)	Pakistan (0.52)	Kazakhstan (0.75)	Singapore (0.88)
	Sierra Leone (0.25)	Cambodia (0.51)	Ukraine (0.74)	Hong Kong, China (SAR) (0.87)
			Azerbaijan (0.72)	Korea, Rep. of (0.85)
	<u>Asia</u>	<u>Transition Economies</u>	Armenia (0.72)	Brunei Darussalam (0.85)
	Lao People's Dem. Rep. (0.48)	Moldova, Rep. of (0.7)	Albania (0.71)	
	Bhutan (0.48)	Uzbekistan (0.69)	Kyrgyzstan (0.71)	<u>Transition Economies</u>
	Nepal (0.47)	Tajikistan (0.66)	Turkmenistan (0.7)	Slovenia (0.86)
	Bangladesh (0.46)			Czech Republic (0.84)
		<u>Middle East</u>	<u>Middle East</u>	Slovakia (0.82)
	<u>Middle East</u>	Syrian Arab Republic (0.66)	Libyan Arab Jamahiriya (0.76)	Hungary (0.82)
	Yemen (0.45)	Egypt (0.62)	Saudi Arabia (0.75)	Poland (0.81)
		Iraq (0.58)	Lebanon (0.74)	Estonia (0.8)
	<u>Western Hemisphere</u>		Oman (0.73)	
	Haiti (0.44)	<u>Western Hemisphere</u>	Jordan (0.72)	<u>Middle East</u>
		El Salvador (0.7)	Iran, Islamic Rep. of (0.71)	Israel (0.88)
		Honduras (0.65)		Kuwait (0.84)
		Bolivia (0.64)	<u>Western Hemisphere</u>	Bahrain (0.82)
		Nicaragua (0.63)	Saint Kitts and Nevis (0.8)	Qatar (0.82)
		Guatemala (0.62)	Costa Rica (0.8)	United Arab Emirates (0.81)
			Trinidad and Tobago (0.79)	
			Dominica (0.79)	<u>Western Hemisphere</u>
			Grenada (0.78)	Barbados (0.86)
			Mexico (0.78)	Bahamas (0.84)
			Cuba (0.78)	Argentina (0.84)
			Belize (0.78)	Antigua and Barbuda (0.83)
			Panama (0.78)	Chile (0.83)
			Venezuela (0.77)	Uruguay (0.82)
			Suriname (0.77)	
			Colombia (0.76)	
			Brazil (0.75)	
			Saint Vincent and the Grenadines (0.74)	
			Peru (0.74)	
			Paraguay (0.74)	
			Jamaica (0.73)	
			Dominican Republic (0.73)	
			Saint Lucia (0.73)	
			Ecuador (0.72)	
			Guyana (0.71)	
Number of countries	35	38	55	46

Source: UNDP, *Human Development Report 2000*

Table 2. Human Development Index (HDI), 1975

HDI	0.22 - 0.50	0.51 - 0.70	0.71 - 0.80	> 0.80
	<p><u>Africa</u> Botswana (0.49) Lesotho (0.47) Zambia (0.44) Kenya (0.44) Ghana (0.43) Morocco (0.43) Congo (0.42) Congo, Dem. Rep. of the (0.42) Madagascar (0.41) Cameroon (0.41) Togo (0.4) Côte d'Ivoire (0.37) Mauritania (0.34) Sudan (0.34) Central African Republic (0.33) Nigeria (0.32) Malawi (0.31) Senegal (0.31) Benin (0.28) Burundi (0.28) Gambia (0.27) Chad (0.25) Guinea-Bissau (0.25) Mali (0.25) Niger (0.24) Burkina Faso (0.23)</p> <p><u>Asia</u> Indonesia (0.46) Papua New Guinea (0.44) India (0.41) Pakistan (0.35) Bangladesh (0.33) Nepal (0.29)</p> <p><u>Middle East</u> Egypt (0.43)</p>	<p><u>Europe/Industrial Countries</u> Turkey (0.59)</p> <p><u>Africa</u> South Africa (0.65) Mauritius (0.63) Zimbabwe (0.52) Tunisia (0.51) Algeria (0.51) Swaziland (0.51)</p> <p><u>Asia</u> Korea, Rep. of (0.68) Fiji (0.68) Philippines (0.65) Malaysia (0.62) Sri Lanka (0.61) Thailand (0.6) China (0.52)</p> <p><u>Middle East</u> Saudi Arabia (0.59) Iran, Islamic Rep. of (0.57) Syrian Arab Republic (0.53)</p> <p><u>Western Hemisphere</u> Mexico (0.69) Jamaica (0.69) Guyana (0.68) Paraguay (0.66) Colombia (0.66) Brazil (0.64) Peru (0.64) Ecuador (0.62) Dominican Republic (0.61) El Salvador (0.58) Nicaragua (0.57) Honduras (0.52) Bolivia (0.51) Guatemala (0.5)</p>	<p><u>Europe/Industrial Countries</u> Greece (0.8) Portugal (0.73) Malta (0.72)</p> <p><u>Asia</u> Hong Kong, China (SAR) (0.75) Singapore (0.73)</p> <p><u>Transition Economies</u> Hungary (0.77) Romania (0.75)</p> <p><u>Middle East</u> United Arab Emirates (0.74)</p> <p><u>Western Hemisphere</u> Argentina (0.78) Uruguay (0.75) Costa Rica (0.73) Trinidad and Tobago (0.72) Venezuela (0.71) Panama (0.71) Chile (0.7)</p>	<p><u>Europe/Industrial Countries</u> Switzerland (0.87) Canada (0.86) United States (0.86) Sweden (0.86) Denmark (0.86) Iceland (0.86) Netherlands (0.86) Norway (0.85) Japan (0.85) France (0.84) New Zealand (0.84) Australia (0.84) Belgium (0.84) United Kingdom (0.84) Austria (0.84) Finland (0.83) Italy (0.82) Luxembourg (0.82) Spain (0.81) Ireland (0.81)</p> <p><u>Middle East</u> Israel (0.8)</p>
	Number of countries 33	31	15	21

Source: UNDP, *Human Development Report 2000*

Table 3. Human Development Index (HDI), 1998 (Selected countries^{1/})

HDI	0.22 - 0.50	0.51 - 0.70	0.71 - 0.80	> 0.80
	<u>Africa</u> Madagascar (0.48) Sudan (0.48) Togo (0.47) Mauritania (0.45) Nigeria (0.44) Congo, Dem. Rep. of the (0.43) Zambia (0.42) Côte d'Ivoire (0.42) Senegal (0.42) Benin (0.41) Gambia (0.4) Malawi (0.38) Mali (0.38) Central African Republic (0.37) Chad (0.37) Guinea-Bissau (0.33) Burundi (0.32) Burkina Faso (0.3) Niger (0.29) <u>Asia</u> Nepal (0.47) Bangladesh (0.46)	<u>Africa</u> South Africa (0.7) Algeria (0.68) Swaziland (0.66) Botswana (0.59) Morocco (0.59) Lesotho (0.57) Ghana (0.56) Zimbabwe (0.56) Cameroon (0.53) Kenya (0.51) Congo (0.51) <u>Asia</u> Indonesia (0.67) India (0.56) Papua New Guinea (0.54) Pakistan (0.52) <u>Middle East</u> Syrian Arab Republic (0.66) Egypt (0.62) <u>Western Hemisphere</u> El Salvador (0.7) Honduras (0.65) Bolivia (0.64) Nicaragua (0.63) Guatemala (0.62)	<u>Europe/Industrial Countries</u> Turkey (0.73) <u>Africa</u> Mauritius (0.76) Tunisia (0.7) <u>Asia</u> Malaysia (0.77) Fiji (0.77) Thailand (0.74) Philippines (0.74) Sri Lanka (0.73) China (0.71) <u>Transition Economies</u> Romania (0.77) <u>Middle East</u> Saudi Arabia (0.75) Iran, Islamic Rep. of (0.71) <u>Western Hemisphere</u> Costa Rica (0.8) Trinidad and Tobago (0.79) Mexico (0.78) Panama (0.78) Venezuela (0.77) Colombia (0.76) Brazil (0.75) Peru (0.74) Paraguay (0.74) Jamaica (0.73) Dominican Republic (0.73) Ecuador (0.72) Guyana (0.71)	<u>Europe/Industrial Countries</u> Canada (0.93) Norway (0.93) United States (0.93) Australia (0.93) Iceland (0.93) Sweden (0.93) Belgium (0.92) Netherlands (0.92) Japan (0.92) United Kingdom (0.92) Finland (0.92) France (0.92) Switzerland (0.92) Denmark (0.91) Austria (0.91) Luxembourg (0.91) Ireland (0.91) Italy (0.9) New Zealand (0.9) Spain (0.9) Greece (0.88) Portugal (0.86) Malta (0.87) <u>Asia</u> Singapore (0.88) Hong Kong, China (SAR) (0.87) Korea, Rep. of (0.85) <u>Transition Economies</u> Hungary (0.82) <u>Middle East</u> Israel (0.88) United Arab Emirates (0.81) <u>Western Hemisphere</u> Argentina (0.84) Chile (0.83) Uruguay (0.82)
Number of countries	21	22	25	32

Source: UNDP, *Human Development Report 2000*^{1/} Countries for which HDI was available in 1975

Table 4a. HDI Transition Matrix (All countries)
(Number of countries)

HDI in 1975	HDI in 1998				Total
	0.22 - 0.50	0.51 - 0.70	0.71 - 0.80	> 0.80	
0.22 - 0.50	21	12	--	--	33
0.51 - 0.70	--	10	20	1	31
0.71 - 0.80	--	--	5	10	15
> 0.80	--	--	--	21	21
Total	21	22	25	32	100

Table 4b. HDI Transition Matrix

HDI in 1975	HDI in 1998			
	0.22 - 0.50	0.51 - 0.70	0.71 - 0.80	> 0.80
0.22 - 0.50	Guinea-Bissau, Nepal, Senegal, Burkina Faso, Bangladesh, Côte d'Ivoire, Burundi, Madagascar, Gambia, Chad, Mali, Central African Republic, Togo, Malawi, Benin, Zambia, Nigeria, Mauritania, Congo, Dem. Rep. of the, Niger, Sudan	Egypt, Ghana, India, Lesotho, Indonesia, Morocco, Papua New Guinea, Cameroon, Congo, Pakistan, Kenya, Botswana	--	--
0.51 - 0.70	--	El Salvador, Nicaragua, Guatemala, Swaziland, Syrian Arab Republic, Zimbabwe, Bolivia, Algeria, Honduras, South Africa	Mexico, Guyana, Saudi Arabia, Brazil, Fiji, Philippines, Dominican Republic, Ecuador, China, Turkey, Tunisia, Jamaica, Paraguay, Peru, Mauritius, Thailand, Sri Lanka, Iran, Islamic Rep. of, Colombia, Malaysia	Korea, Rep. Of
0.71 - 0.80	--	--	Romania, Trinidad and Tobago, Costa Rica, Venezuela, Panama	Portugal, Greece, Hong Kong, China (SAR), Argentina, Malta, Hungary, United Arab Emirates, Uruguay, Singapore, Chile
> 0.80	--	--	--	Belgium, United States, United Kingdom, Italy, Sweden, Israel, New Zealand, Canada, Norway, Japan, Finland, Ireland, Netherlands, Spain, France, Austria, Iceland, Denmark, Luxembourg, Switzerland, Australia

Source: UNDP, *Human Development Report 2000*

Table 5a. HDI Transition Matrix (excluding industrial countries^{1/})
(Number of countries)

HDI in 1975	Absolute changes in HDI by 1998				Total
	0 - 0.1	0.1 - 0.2	0.2 - 0.3	> 0.3	
0 - 0.35	--	2	6	8	16
0.36 - 0.50	2	6	4	5	17
0.51 - 0.60	1	2	10	2	15
0.61 - 0.70	3	11	2	--	16
0.71 - 0.80	9	4	--	--	13
Total	15	25	22	15	77

Table 5b. HDI Transition Matrix (excluding industrial countries)

HDI in 1975	Absolute changes in HDI by 1998			
	0 - 0.1	0.1 - 0.2	0.2 - 0.3	> 0.3
Low	Zambia, Congo, Dem. Rep.	Central African Republic, Burundi, Togo, Côte d'Ivoire, Botswana, Madagascar, Kenya, Congo	Niger, Mauritania, Burkina Faso, Guinea-Bissau, Malawi, Senegal, Papua New Guinea, Lesotho, Ghana, Cameroon	Sudan, Nigeria, Nepal, Mali, Chad, Bangladesh, Gambia, Benin, Morocco, Pakistan, Egypt, Indonesia, India
Middle	Zimbabwe, Jamaica, Guyana, South Africa	El Salvador, Nicaragua, Paraguay, Colombia, Mexico, Dominican Republic, Philippines, Peru, Fiji, Ecuador, Brazil, Mauritius, Sri Lanka	Iran, Islamic Rep. of, Turkey, Syrian Arab Republic, Algeria, Bolivia, Thailand, Saudi Arabia, Guatemala, Swaziland, Honduras, Malaysia, Korea	China, Tunisia
High	Uruguay, United Arab Emirates, Panama, Venezuela, Romania, Argentina, Hungary, Costa Rica, Trinidad and Tobago	Malta, Chile, Hong Kong, China (SAR), Singapore	--	--

Source: UNDP, *Human Development Report 2000*

^{1/} 23 countries were excluded.

Table 6. Macroeconomic Performance (1975 - 98)

Average of 1975 - 98														
	Growth in real GDP per capita ^{7/}	Inflation ^{8/}	Deficit ^{9/} (% of GDP)	Government consumption ¹⁰ /	Standard deviation in inflation ^{11/}	Log difference in terms of trade ^{12/}	External debt ^{13/} (% of GDP)	Private capital flow ^{14/} (% of GDP)	Exports and imports (% of GDP)	Openness * GDP ^{15/}	Aid ^{16/} (% of GNP)	Rule of law ^{17/}	Black market premium ^{18/}	Percent of years country had crisis ^{19/}
Low HDI														
Slow change in HDI ^{1/}	-0.22	91.50	-4.89	16.17	259.83	-0.33	87.49	2.03	68.21	3.47	13.49	28.80	48.62	44.00
Rapid change in HDI ^{2/}	1.42	13.69	-4.43	12.14	10.81	-0.25	60.74	1.53	47.48	13.07	7.94	34.69	35.35	35.64
Middle HDI														
Slow change in HDI ^{3/}	0.63	151.85	-6.22	13.34	311.63	-0.48	77.18	2.27	66.20	10.73	4.20	40.82	236.99	37.45
Rapid change in HDI ^{4/}	1.85	54.81	-2.56	14.69	179.01	-0.11	45.36	2.92	67.48	28.89	2.56	49.31	103.87	20.24
High HDI														
Slow change in HDI ^{5/}	0.34	82.67	-0.92	13.16	114.53	-0.21	48.77	3.29	63.72	1.66	0.66	59.93	50.98	37.78
Rapid change in HDI ^{6/}	5.34	14.77	1.51	12.04	22.82	-0.51	42.00	6.58	205.77	271.07	0.61	88.64	4.17	7.50

Source: UNDP, *Human Development Report 2000*; World Development Indicators; and International Financial Statistics.

^{1/} Countries in this category include Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Congo, Congo, Dem. Rep., Côte d'Ivoire, Ghana, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mauritania, Niger, Papua New Guinea, Senegal, Togo

^{2/} Countries include Bangladesh, Benin, Chad, Egypt, Gambia, India, Indonesia, Mali, Morocco, Nepal, Nigeria, Pakistan and Sudan.

^{3/} Countries include Brazil, Colombia, Dominican Republic, Ecuador, El Salvador, Fiji, Guyana, Jamaica, Mauritius, Mexico, Nicaragua, Paraguay, Peru, Philippines, South Africa, Sri Lanka and Zimbabwe.

^{4/} Countries include Algeria, Bolivia, China, Guatemala, Honduras, Iran, Korea, Malaysia, Saudi Arabia, Swaziland, Syrian Arab Republic, Thailand, Tunisia and Turkey.

^{5/} Countries include Argentina, Costa Rica, Hungary, Panama, Romania, Trinidad and Tobago, United Arab Emirates, Uruguay and Venezuela.

^{6/} Countries include Chile, Hong Kong, SAR, Malta, Singapore and Israel.

^{7/} Log difference of real output

^{8/} Percentage change in consumer prices per annum

^{9/} Overall fiscal deficit as a percent of GDP

^{10/} Government consumption spending as a percent of GDP

^{11/} Standard deviation of inflation between 1975-98

^{12/} Log difference in terms of trade between 1975-98

^{13/} External debt as percent of GDP in 1975

^{14/} Private capital flow as a percent of GDP

^{15/} Imports and exports in share of GDP weighted by GDP growth between 1975-98

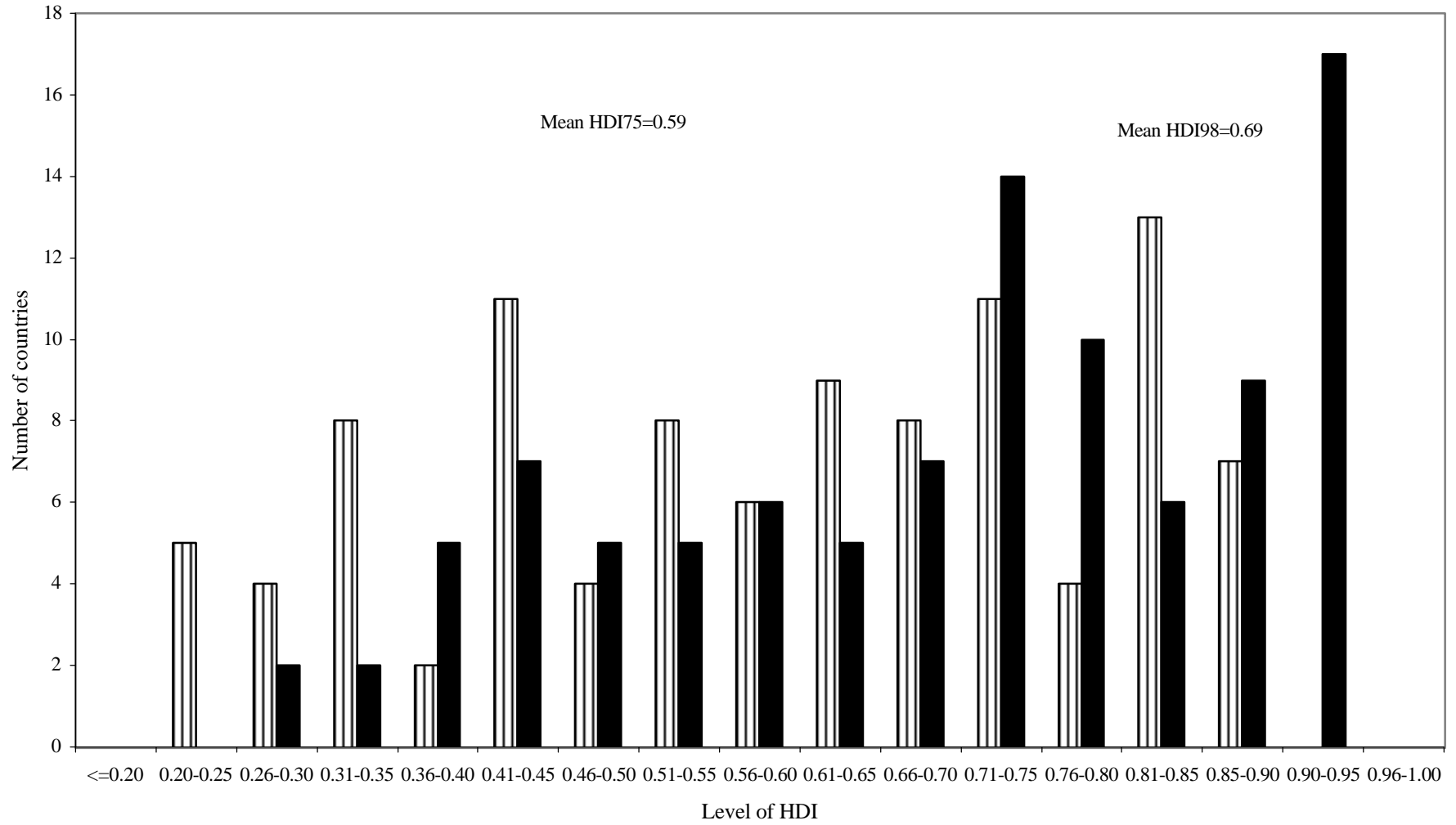
^{16/} Aid as a percent of GNP

^{17/} Rule of law as defined by Kaufmann *et al* (1999).

^{18/} Defined as (parallel exchange rate/official exchange-1)*100

^{19/} Percent of years the country had a financial crisis, during 1970-99.

Figure 1: Histogram of Human Development Index (HDI): 1975 and 1998



Source: UNDP, Human Development Report (2000).

▨ hdi75

■ hdi98

Figure 2. Human Development Index (HDI) and Human Poverty Index (HPI)¹: 1998

Figure 2a. Scatter plot of HDI and HPI (All countries)

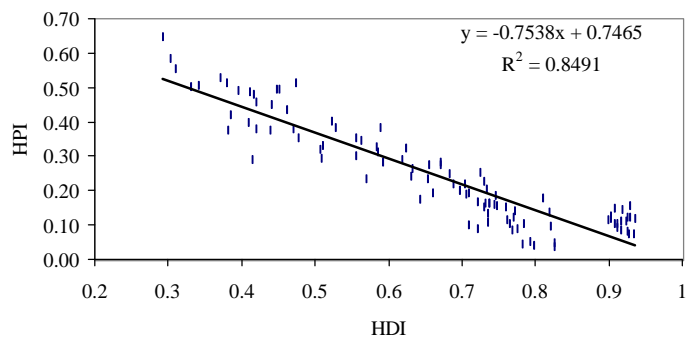


Figure 2b. Scatter plot of HDI and HPI (All countries)

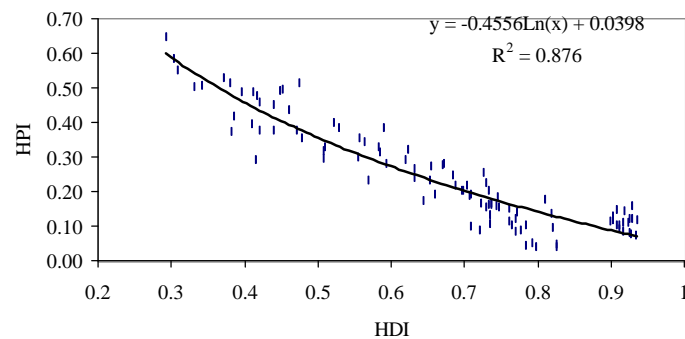


Figure 2c. Scatter plot of HDI & HPI (Low and medium HDI countries)

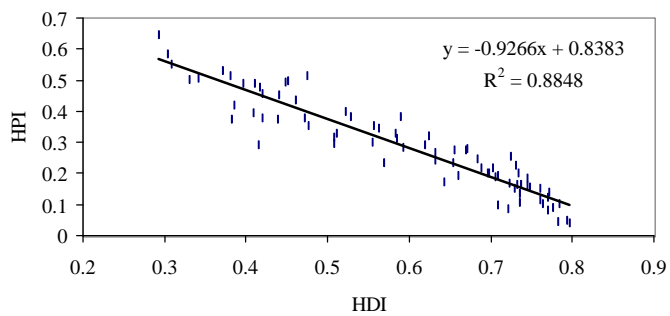
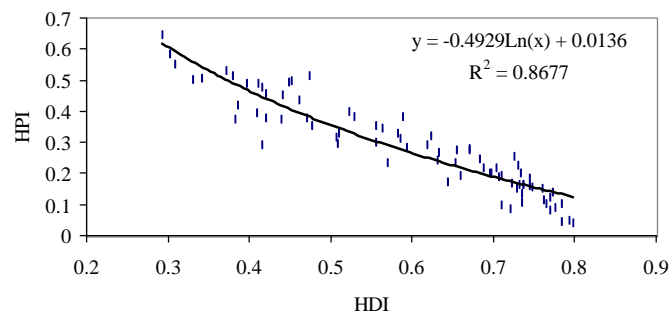


Figure 2d. Scatter plot of HDI & HPI (Low and medium HDI countries)



¹ Total number of countries equal to 174, number of low and medium HDI countries is 80.

Source: UNDP, Human Development Report (2000).

Figure 3. Human Development Index (HDI) and Poverty Line

Figure 3a. Scatter Plot of HDI (1998) and Poverty Line (\$ 1 a day)

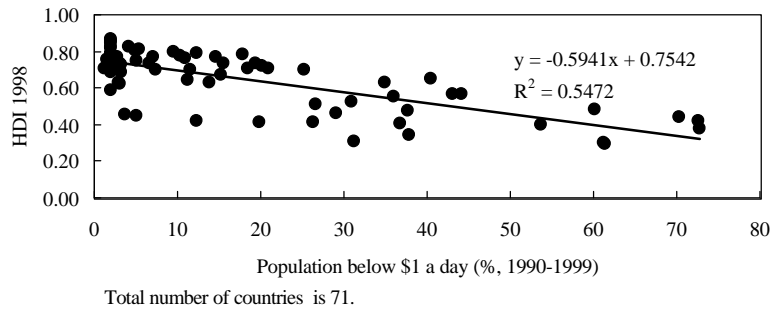


Figure 3b. Scatter Plot of HDI (1998) and Poverty Line (\$ 2 a day)

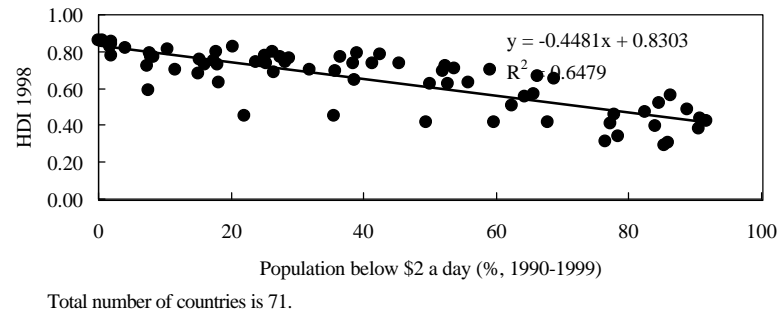


Figure 3c. Scatter Plot of HDI (1990) and Poverty Line (\$ 1 a day)

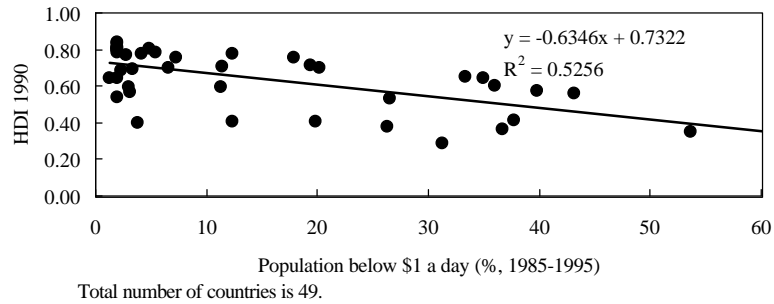
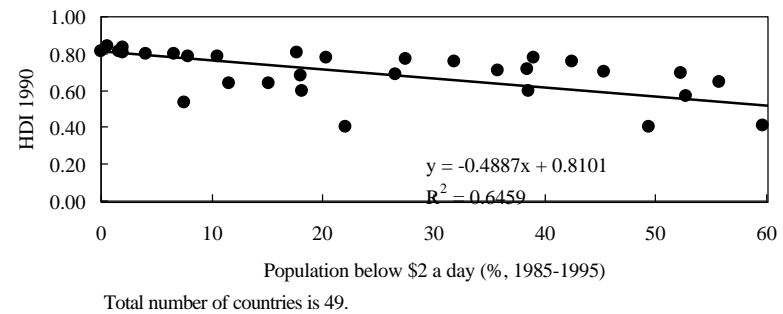


Figure 3d. Scatter Plot of HDI (1990) and Poverty Line (\$ 2 a day)



Source: UNDP, Human Development Report (2000); and World Development Indicators.

Figure 4. Human Development Index (HDI) and Gini Coefficient

Figure 4a. Scatter Plot of HDI and Gini Coefficient: 1990

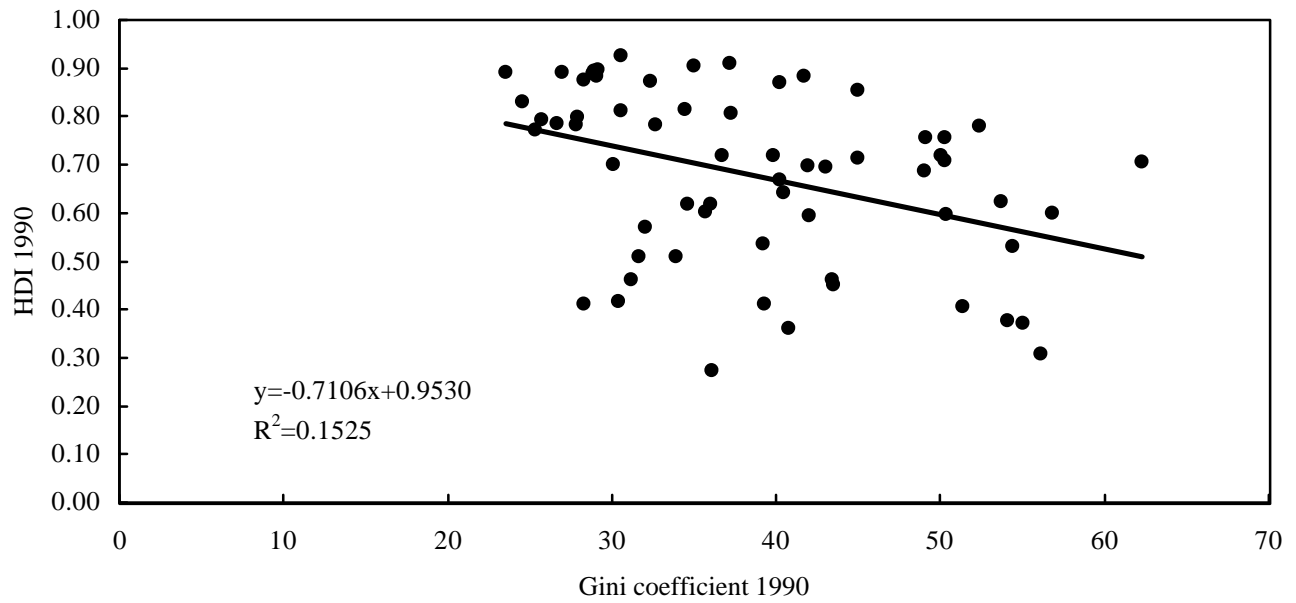
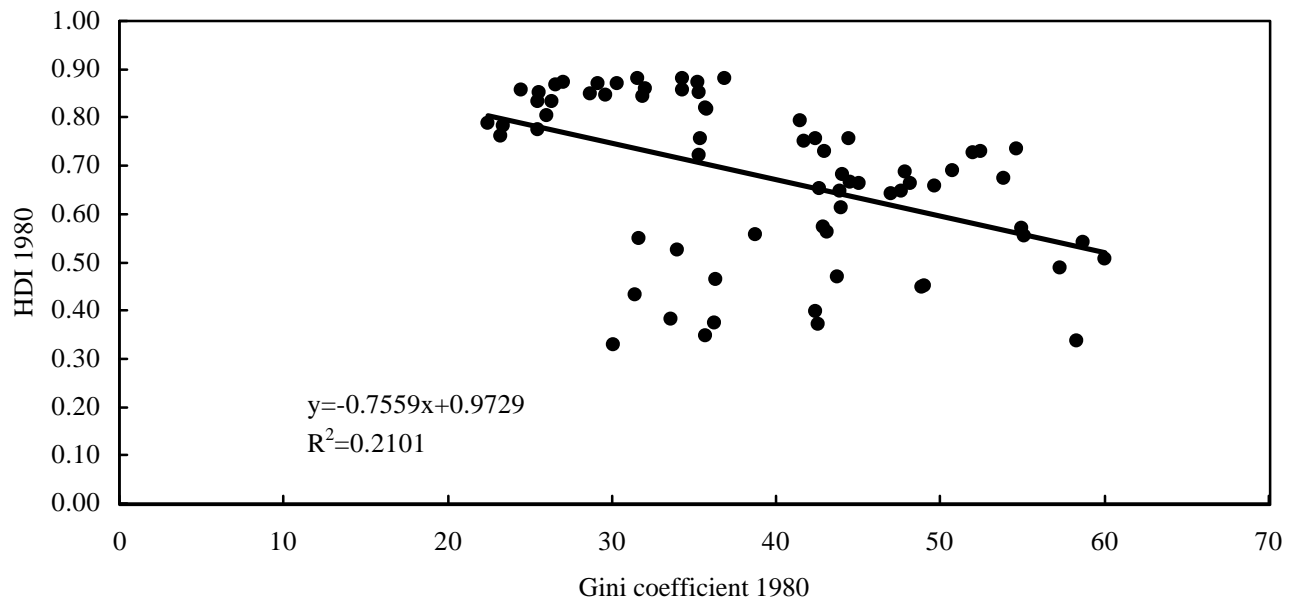


Figure 4b. Scatter Plot of HDI and Gini Coefficient: 1980



Source: UNDP, Human Development Report (2000) and World Development Indicators (2000).

Figure 5. Economic Growth and Human Development Index (HDI): 1975-1998

Figure 5a. Change in HDI and Growth in Per Capita Income: 1975-1998

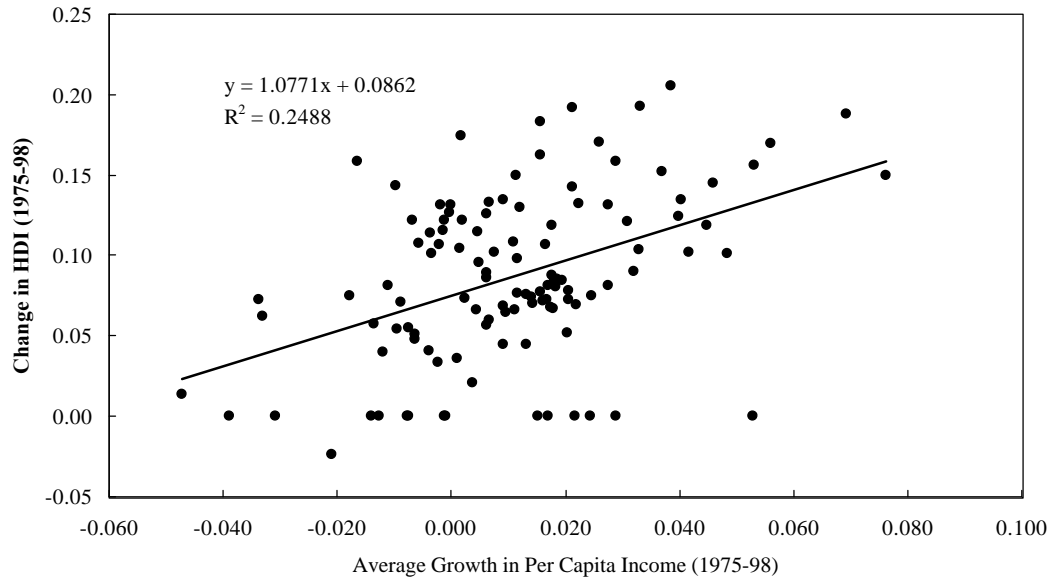
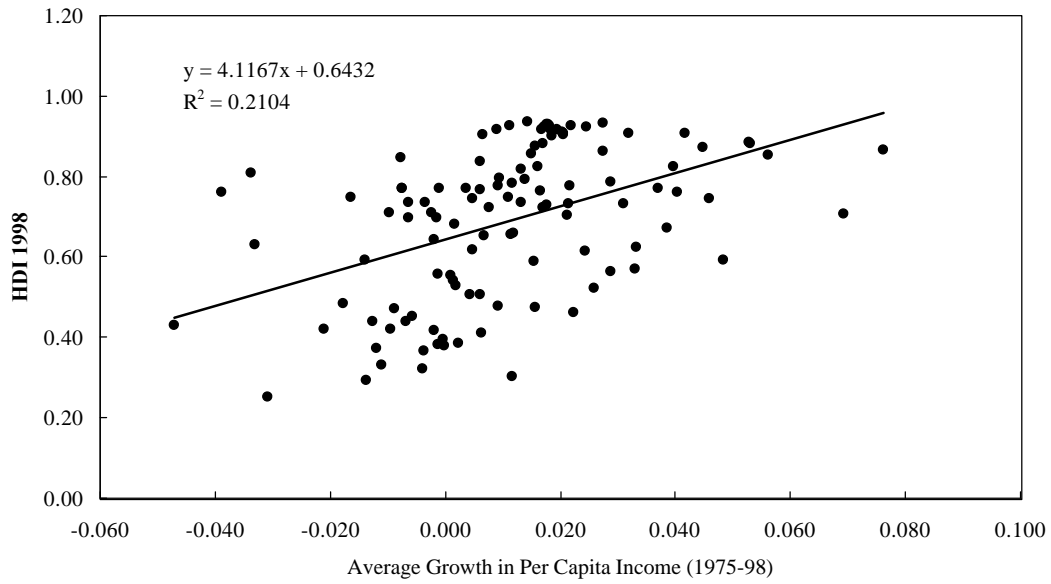
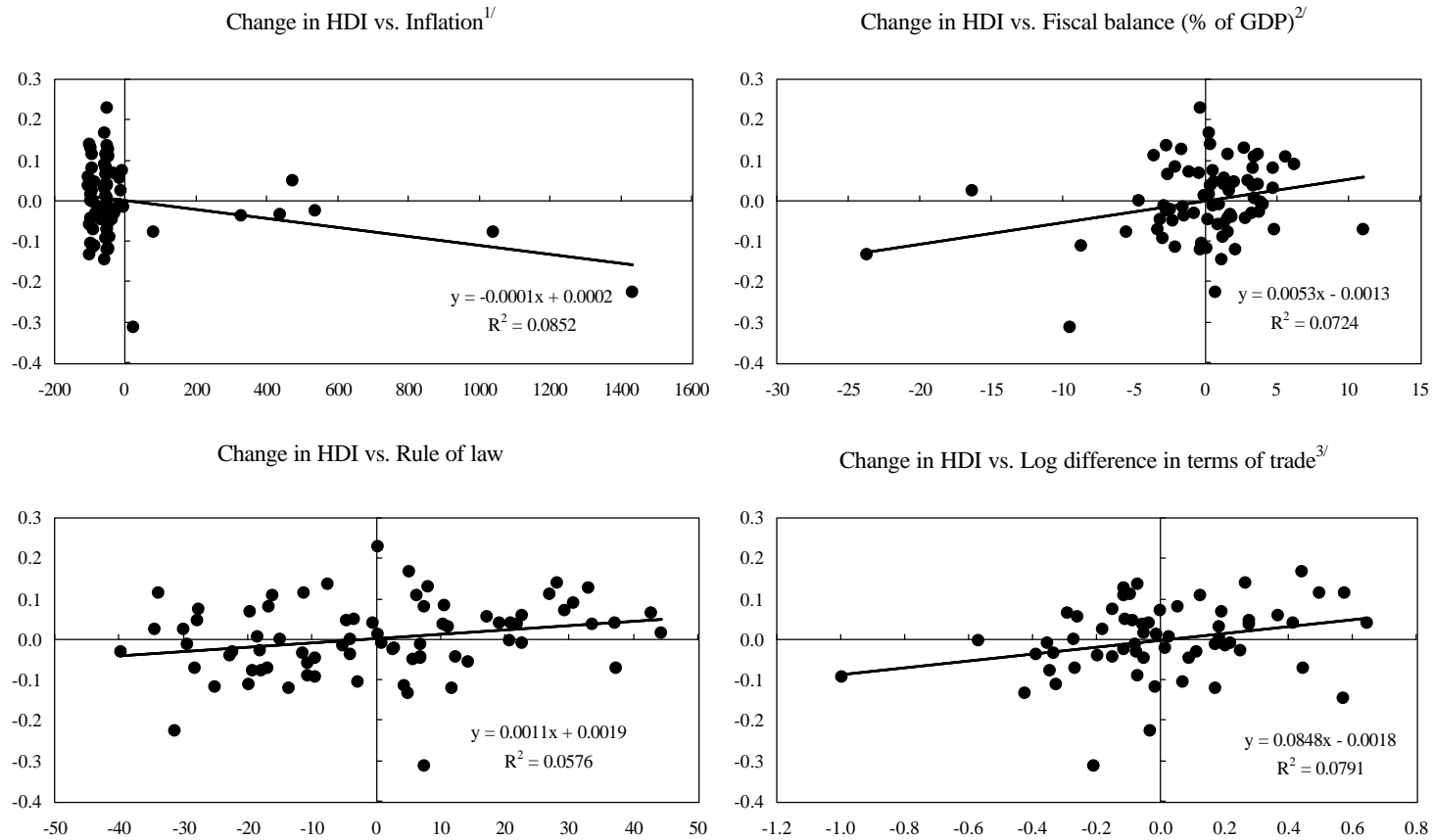


Figure 5b. HDI (1998) and Growth in Per Capita Income (1975-1998)



Source: UNDP, Human Development Report (2000) and World Development Indicators (2000).

Figure 6a. Human Development Index (HDI) and Macroeconomic Performance



Source: UNDP, Human Development Report 2000; World Development Indicators; International Financial Statistics; and Kaufman *et al.*

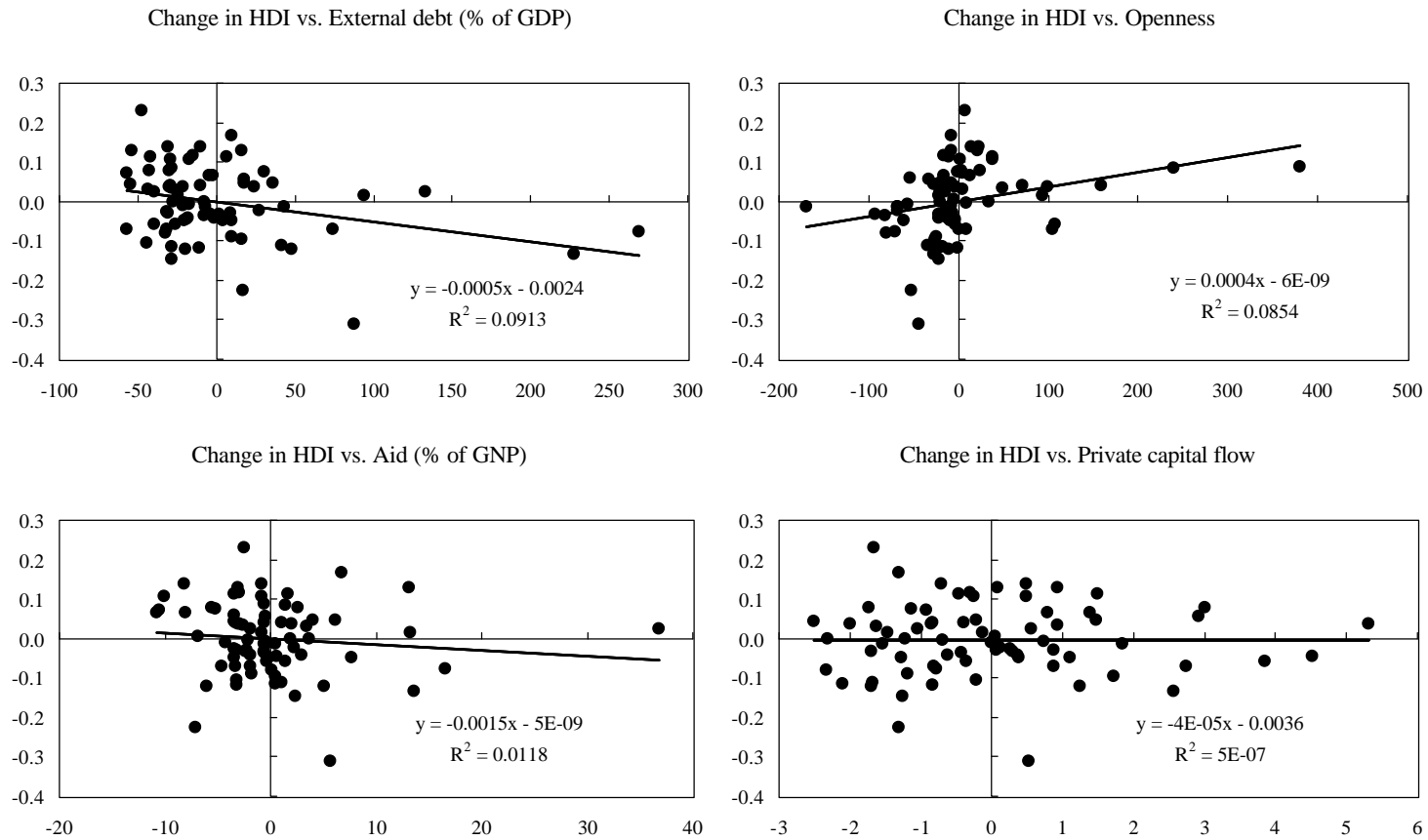
Note: Change in HDI indicates the difference between HDI in 1998 and HDI in 1975.

^{1/} Average inflation between 1975 and 1998.

^{2/} Average fiscal balance as a share of GDP between 1975 and 1998.

^{3/} Log difference in terms of trade in 1975 and that of 1998.

Figure 6b. Human Development Index (HDI) and Macroeconomic Performance



Source: UNDP, Human Development Report 2000; and World Development Indicators.

Note: Change in HDI indicates the difference between HDI in 1998 and HDI in 1975. All other variables are averages between 1975 and 1998.