CONSULTING ASSISTANCE ON ECONOMIC REFORM II

DISCUSSION PAPERS

The objectives of the Consulting Assistance on Economic Reform (CAER II) project are to contribute to broad-based and sustainable economic growth and to improve the policy reform content of USAID assistance activities that aim to strengthen markets in recipient countries. Services are provided by the Harvard Institute for International Development (HIID) and its subcontractors. It is funded by the U.S. Agency for International Development, Bureau for Global Programs, Field Support and Research, Center for Economic Growth and Agricultural Development, Office of Emerging Markets through Contracts PCE-C-00-95-00015-00 (formerly PCE-0405-C-00-5015-00) and PCE-Q-00-95-00016-00 (formerly PCE-0405-Q-00-5016-00).

How Well Do the Poor Connect to the Growth Process?

C. Peter Timmer

CAER II Discussion Paper No. 17
December 1997

The views and interpretations in these papers are those of the authors and should not be attributed to the Agency for International Development, the Harvard Institute for International Development, or CAER II subcontractors.

For information contact:
CAER II Project Office
Harvard Institute for International Development
14 Story Street
Cambridge, MA 02138 USA
Tel: (617) 495-9776; Fax: (617) 495-0527
Email: caer@hiid.harvard.edu

December 1997

HOW WELL DO THE POOR CONNECT TO THE GROWTH PROCESS?

C. Peter Timmer

Thomas D. Cabot Professor of Development Studies, At-Large

Harvard University

Faculty Fellow

Harvard Institute for International Development

This paper was funded by USAID under the Consulting Assistance on Economic Reform (CAER) II project, contract PCE-0405-C-00-5-15-00. The views and interpretations presented in this paper are those of the author and should not be attributed to HIID or to USAID. This revised draft has benefited from comments received at the meeting of USAID economists on September 30, 1997, seminars at the World Bank and Brown University, and from Gary Fields, John Gallup, Arthur Goldsmith, Mary Kay Gugerty, Orest Koropecky, Charles Mann, John Mellor, Steve Radelet, and Ashley Timmer. Gabriel Hanz provided the necessary computer skills to actually carry out the research.

One Eliot Street

Cambridge, Massachusetts 02138

How Well Do the Poor Connect to the Growth Process?

Executive Summary

by C. Peter Timmer

Income distribution is at the core of classical political economy, as the debates between Ricardo and Malthus attest. Marginal productivity as the key determinant of factor shares in national income is at the core of modern neoclassical economics, which focuses on efficient allocation of scarce resources. The basic model of economic development, Lewis' dual economy model with surplus labor, is driven by changes in income distribution over the growth process. Kuznets' empirical verification of the pattern suggested by the Lewis model established the "Kuznets Curve" as the paradigmatic relationship linking income distribution and economic development, with the distribution of income first worsening, then improving as per capita incomes rose over time.

The publication in 1996 of the Deininger-Squire data set on income distribution allowed preliminary testing of these fundamental theoretical models that had gone relatively untested for generations. At one level, the new data have supported a very comforting story. There is little doubt that rapid economic growth reduces poverty. Even cursory analysis of the Deininger-Squire data set on changes in income distribution over time reveals only a small handful of examples where economic growth on average failed to increase per capita incomes in the bottom twenty or forty percent of the income distribution. For some analysts, the investigation can stop at this point because economic growth seems to "trickle down" to the poor in most circumstances, at least in a limited way. Thus economic growth is nearly always better for the poor than retardation, and economists should get on with maximizing the rate of growth.

But most economists and nearly all policy makers are reluctant to stop at this point in the analysis because modern economic history--since World War II--has left growing numbers of poor people despite rapid economic growth by earlier historical standards. A statistical result that reports a strong linkage between economic growth and poverty alleviation under nearly all circumstances seems somehow to miss the growing numbers of poor, as well as the anecdotal stories about widening income gaps and the poor being left behind, stories with powerful political resonance. It would be useful to know if there is any statistical confirmation in the growth record to these stories and, if so, whether it is possible to improve the connection between growth and poverty alleviation revealed by this record.

The approach here is straightforward. A carefully chosen subset of the Deininger-Squire data is subjected to an innovative econometric procedure that utilizes the availability of five separate (but linked) observations--the per capita income of each quintile in the income distribution--for each year in which Deininger and Squire judge

developing countries, with a
y test as well as the "relevance"

nonly, expenditures) by quintile
a on real per capita incomes in
Tables, it is possible to generate
in each quintile. Most
for the incomes of the bottom
he time period of the
try in the sample. In what is
cause economic growth, these
ral, institutional, political, and

of the panel nature of the data
each country for each year data
e meant to be comparable
erging the data in this form is a
y for each year of data on
able to track the impact of
he impact of economic growth

onnection" between growth in
each quintile. The results of
ıe dependent variable is
h quintile and the independent
the entire economy, are that
r the poorest quintile is only 0.8
adily to slightly greater than
orsened during the process of

percent per year per capita was
l would produce a significant
o of incomes in the top quintile
exercise, would deteriorate to

arent rejection of the Kuznets
ne relationship between
The short answer is that the
ın connection of the poor to the

growth process, whereas the growth-rate model used in earlier research captures the extent to which the poor are connected to short-run shocks buffeting the overall economy.

In this sense, the "connection" coefficient in the growth rate model is actually capturing the extent to which the poor are able to buffer their incomes from macroeconomic shocks. The test is more telling when the quintile data are based on expenditures (nearly always) rather than incomes, because then the interpretation is a test of how well the poor are able to insure their consumption levels in the face of fluctuating incomes. A coefficient of one, the common result from these studies, suggests the poor are completely unable to stabilize their consumption path in the face of unstable incomes. This failure of the poor to self-insure against consumption risks is likely to have profound welfare consequences.

Neither model is "right" or "wrong." Each is asking a different question from the same data base. For understanding the issue in this paper, how well the poor connect to the long-run process of economic growth, the fixed-effects model offers more insights. It better captures the structure of the economies being examined than does the growth-rate model. Indeed, the approach used here has the potential to reveal how structural forces in an economy influence the distribution of income during the long-run process of economy growth, a potential ironically missing from the growth-rate models.

The two most important of these structural features are the share of agriculture in the economy and the relative size of the income gap between poor and rich. When weighted by their share in the labor force, the per capita labor productivities of workers in agriculture and non-agriculture seem to have differential effects on the average earnings in each income quintile. In countries in which the income gap is relatively small, labor productivity in agriculture is slightly but consistently more important in generating incomes in each of the five quintiles. Furthermore, agricultural productivity has a noticeable "anti-Kuznets" effect in these countries. A similar "anti-Kuznets" effect is seen from the non-agricultural sector and this impact is even more important to the poor because the non-agricultural sector makes up, on average, 75 percent of the overall economy. It also has the capacity to grow significantly faster than the agricultural economy over sustained periods of time.

For countries with large income gaps, the "early" (and discouraging) part of the Kuznets curve is a dramatic reality of their economies. In these countries, growth in agricultural productivity is no more successful in alleviating poverty than growth in the non-agricultural economy. Indeed, the rich benefit considerably from agricultural growth in countries with large income gaps, no doubt because of highly skewed distributions of land. But neither sector reaches the poor very effectively.

These contrasting structures have immediate implications for the distribution of economic growth. Maintaining the previous experiment of an economy growing by 5 percent per year in per capita terms, for twenty-five years, it is possible to show the impact. In economies with relatively small income gaps between rich and poor, this

growth process increases the per capita incomes of the bottom quintile by 241 percent after twenty-five years. Incomes in the top quintile increase by 211 percent; the "top quintile/bottom quintile" ratio actually falls from 5.10 to 4.65. The contrast with the growth process in economies with wide income gaps is stark. Incomes of the bottom quintile increase by just 73 percent over the twenty-five years, whereas incomes in the top quintile increase by 273 percent! The "top/bottom" ratio deteriorates from 13.1 at the start to 28.4 at the end. If these countries could sustain such rapid economic growth for twenty-five years, they would end up with a distribution of income about as bad as that in Brazil.

These results suggest that the relatively good income distributions in some countries of East, Southeast, and South Asia produce a growth process that is more sustainable than in countries with highly skewed income distributions. The reasons are almost certainly political and may hinge importantly on the extent of political liberties and flexibility in the labor market. Economies with few political choices, low and stagnant labor productivity in agriculture, and structural rigidities in moving that labor to more productive sectors are likely to find a visibly growing income gap between the rich and the poor to be more destabilizing than in economies that are open and flexible.

Evidence from the record of economic growth from 1965 to 1985 and from 1985 to 1995 provides a rough confirmation of this line of speculation. When the difference in the rate of growth of per capita incomes between these two periods is regressed on the average relative size of the income gap for each country, the result is a large, negative coefficient that is significant at the one percent level. Controlling for the (logarithm of the) level of per capita income at the end of the period and the growth rate in the first period, a larger income gap is significantly associated with a sharp slowdown in the rate of economic growth from the first to the second period. Richer countries experience a smaller slowdown than poorer countries, suggesting that it is possible to "buy" political stability. And controlling for the other two factors, a faster rate of economic growth in the first period is also associated with a slower rate in the second, suggesting that there is considerable "luck of the draw," or regression to the mean, in individual growth rates.

The apparent failure of economic growth to reach the poor in precisely those environments where the connection would seem to be most crucial is clearly disappointing, but should not be taken as a council of despair or a general indictment of economic growth itself. Even in societies that start with a wide income gap, growth has a positive, although small, impact on the poor, and failure to grow will certainly hurt the poor. More positively, visible and pro-active measures to reach the poor as a concomitant part of trade opening, structural adjustment, and privatization programs designed to speed economic growth will help to sustain the growth-friendly initiatives. Perhaps the failure to sustain rapid economic growth in countries with wide (and widening) income gaps is no mystery when viewed in the context of these results.

How Well Do the Poor Connect to the Growth Process?

by C. Peter Timmer

Income distribution is at the core of classical political economy, as the debates between Ricardo and Malthus attest. Marginal productivity as the key determinant of factor shares in national income is at the core of modern neoclassical economics, which focuses on efficient allocation of scarce resources. The basic model of economic development, Lewis' dual economy model with surplus labor, is driven by changes in income distribution over the growth process (Lewis, 1954). Kuznets' empirical verification of the pattern suggested by the Lewis model established the "Kuznets Curve" as the paradigmatic relationship linking income distribution and economic development, with the distribution of income first worsening, then improving as per capita incomes rose over time (Kuznets, 1955).

If theory is any guide, it would seem that economists should understand exactly what determines the distribution of income and how that distribution affects the process of economic growth. As part of that understanding, and especially because the welfare consequences are so important, it would seem that a clear picture of how the poor participate in the growth process would be readily available. Most crucially, this picture ought to help policy makers condition the growth process in ways that differentially empower the poor.

Of course, this picture is fuzzy at best. Lack of accurate data on income distribution, comparable across the lengthy time periods needed to understand the growth process, has been a particular constraint on filling in the details not discernible from the theorist's broad brush. This constraint has been felt even in rich countries (Kuznets provided no statistical tests for his conjectured curve), and such data have been virtually non-existent for poor countries. India has been an exception, and the work of Martin Ravallion and Gaurav Datt on National Sample Survey data since the 1950s has shown the

possibilities for understanding in great detail how the poor connect, or fail to connect, to economic growth by sector or across regions (e.g., Ravallion and Datt, 1996; Datt and Ravallion, 1997). But until recently the analysis has been limited to India, not a country with a record of rapid economic growth and structural transformation.

The publication in 1996 of the Deininger-Squire data set on income distribution softened this data constraint considerably and scholars have rushed to fill the empirical void created by the availability of fundamental theoretical models that had gone relatively untested for generations (Deininger and Squire, 1996; Fields, 1997; Gallup, Radelet, and Warner, 1997; Ravallion and Chen, 1997; Roemer and Gugerty, 1997.

At one level, the new data have supported a very comforting story. There is little doubt that rapid economic growth reduces poverty. Even cursory analysis of the Deininger-Squire data set on changes in income distribution over time reveals only a small handful of examples where economic growth on average failed to increase per capita incomes in the bottom twenty or forty percent of the income distribution. For some analysts, the investigation can stop at this point because economic growth seems to "trickle down" to the poor in most circumstances, at least in a limited way. Thus economic growth is nearly always better for the poor than retardation and economists should get on with maximizing the rate of growth.

But most economists and nearly all policy makers are reluctant to stop at this point in the analysis because modern economic history--since World War II--has left growing numbers of poor people despite rapid economic growth by earlier historical standards. A statistical result that reports a strong linkage between economic growth and poverty alleviation under nearly all circumstances seems somehow to miss the growing numbers of poor, as well as the anecdotal stories about widening income gaps and the poor being left behind, stories with powerful political resonance. It would be useful to know if there is any statistical confirmation in the growth record to these stories and, if so, whether it is possible to improve the connection between growth and poverty alleviation revealed by this record.

A somewhat more sophisticated analysis of the Deininger-Squire data set begins to address this concern by considering the statistical relationship between growth in per capita incomes of the poor and growth in the overall economy. On average, each one percent increase in per capita incomes for the overall population is matched by a one percent increase in the per capita incomes of those in the bottom forty percent of the income distribution. Thus, on average, there has been a one-to-one link, in percentage terms, between overall income growth and growth in the incomes of the poor. The "representative" growth experience of developing countries since the 1960s seems to have been neutral with respect to income distribution. The Kuznets curve observed during the development of the currently rich countries of the world appears not to be inevitable for those countries trying to catch up (Roemer and Gugerty, 1997).

Even more sophisticated analysis of an expanded data set based on the Deininger-Squire data shows yet further nuances in the connection between economic growth and the incomes of the poor. A one percent growth in agricultural GDP per capita leads to a 1.61 percent increase in per capita incomes of the bottom quintile of the population in 35 developing countries. A similar one percent increase in industrial GDP increases the incomes of the poor by 1.16 percent. And the incomes of the bottom quintile increase by only 0.79 percent with a one percent increase in service sector GDP (Gallup, Radelet, and Warner, 1997). Although these differences are not statistically significant because of noise in the data, they do suggest that, on average, the sectoral composition of growth affects the strength of the linkage between economic growth and poverty.

What other factors affect this linkage, and what mechanisms explain their impact? This paper argues that these questions can be addressed from four perspectives: (1) the level of absolute poverty; (2) relative income distribution; (3) the income gap between upper and lower strata of the income distribution; and (4) asset distribution. For each of these alternative ways of defining poverty, two separate pathways of influence can be explored. First, each of these four characterizations of poverty is likely to have an impact on the rate of economic growth itself (Birdsall, et. al., 1995; Larraín and Vergara,

1997). Because, at a minimum, faster economic growth on average leads to faster reduction in the level of absolute poverty, identifying and quantifying these mechanisms will be important, especially in efforts to build a more general theory that connects the new empirical relationships to models of income distribution and economic growth.

Second, sectoral growth rates clearly have a differential impact on the poor. Ravallion and Datt can find no impact on the poor from growth in the Indian manufacturing sector, even in urban areas, whereas rural growth reduces poverty in both rural and urban areas (Ravallion and Datt, 1995). As noted, preliminary analysis of the expanded Deininger-Squire data set by Gallup, Radelet, and Warner (1997) also hints at the potential for strengthening the linkage from economic growth to poverty alleviation through sectoral priorities. Further, historical experience argues that development strategies and economic policies can significantly strengthen the contribution of the overall growth process to poverty alleviation (Dasgupta, 1993; Fogel, 1994). In some countries, growth strategies have permitted an improvement in the distribution of income at the same time that rapid growth was sustained (World Bank, 1993). In these countries, declines in the levels of absolute poverty have been the fastest in history (Timmer, 1996a).

But even in these countries the income gap between rich and poor has widened. And although the data are spotty, there are plausible reasons to think that asset distributions have also become significantly less equal. As countries approach middle income levels, widening income gaps and concentration of assets in the hands of the visible few have the potential to become politically destabilizing even as absolute poverty is nearly eliminated (or perhaps because of this success). It seems likely that there is a major transition in the political economy of poverty as most absolute poverty is alleviated, and thus the portfolio of approaches to coping with the four different characterizations of poverty will likely have to change as well (A. Timmer, 1997).

Figure 1 presents a rough schematic framework for the discussion in this paper. On the left side of the figure are a set of basic factors that are known to influence the overall rate of economic growth (Barro and Sala-i-Martin, 1995). Some of these influences

are better quantified than others, and the results reported here complement those of Gallup, Radelet and Warner, which establish several of these quantitative linkages much more carefully and accurately.

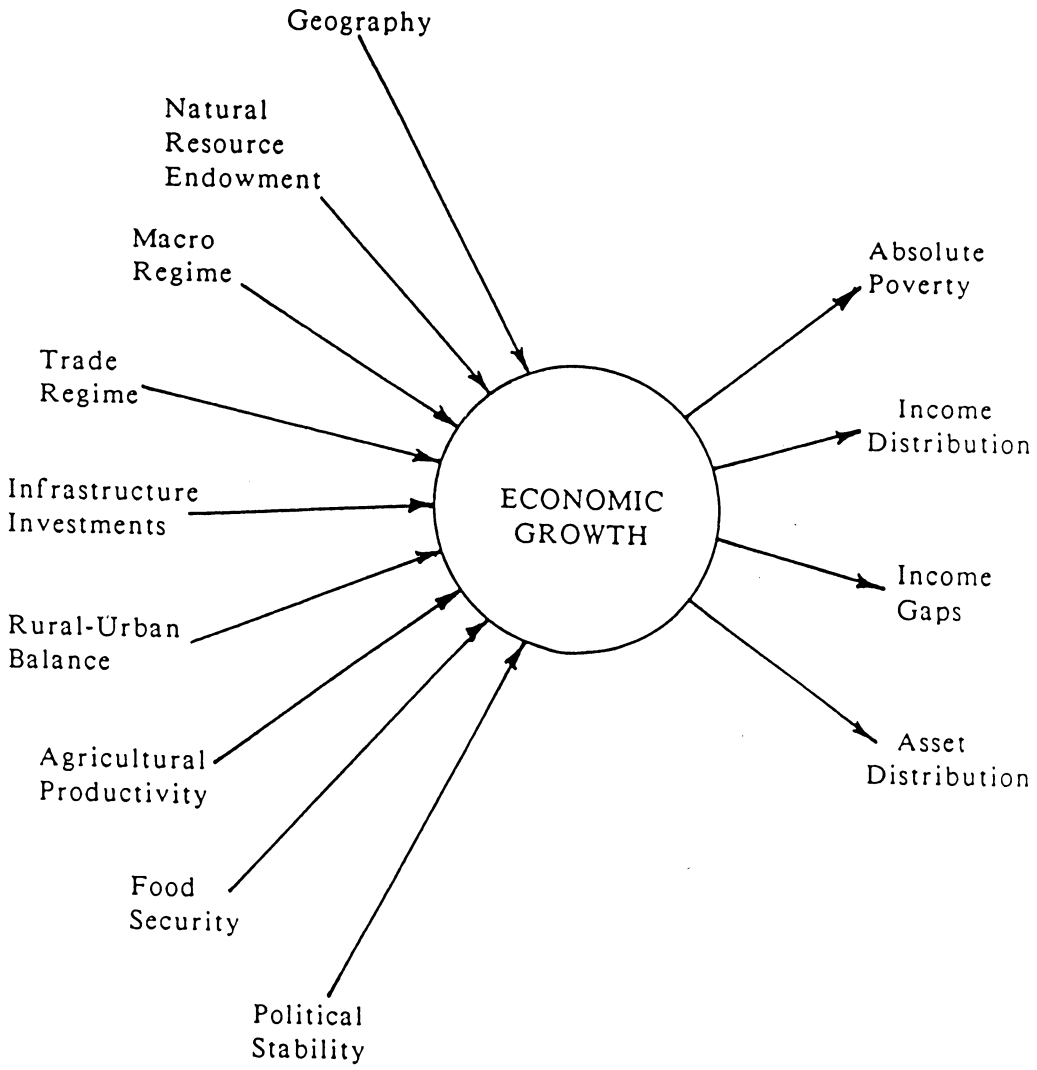
Many of these influences on growth are themselves complementary and interactive, possibly with threshold effects which have been difficult to discern in the empirical record so far. Some of these variables are structural (e.g. "geography" or natural resource endowment), some are strategic (e.g. the rural-urban balance or the macro regime), and some result from clear policy or investment choices (e.g. infrastructure, trade regime, agricultural productivity, or food security). What they have in common on the left side of Figure 1 is the ability to influence the rate of economic growth.

On the right side of Figure 1 are the outcome measures of particular interest in this paper, the effects of economic growth on the level of absolute poverty, on income distribution, on the size of the income gap between, for example, the top and bottom quintile of the income distribution, and on the distribution of assets. All four of these variables are also likely, as was argued above, to influence the rate of economic growth, although the sign of the influence is still controversial and the mechanisms that cause the influence are the subject of ongoing research (Alesina and Perotti, 1993; Perotti, 1996; Larraín and Vergara, 1997).

The primary interest here is in the other direction: to understand the quantitative linkages between economic growth and each of the poverty variables--that is, their statistical relationship--and to understand the analytical mechanisms that influence the effectiveness of these linkages--that is, the behavioral foundations and causal relationships that actually generate the linkages seen in the empirical record. Again, a general theory would need to explain the mechanisms in both directions.

The approach here is straightforward. A carefully chosen sub-set of the Deininger-Squire data is subjected to an innovative econometric procedure that utilizes the availability of five separate (but linked) observations--the per capita income of each

Figure 1.--Establishing Linkages Between Economic Growth and Poverty Alleviation



quintile in the income distribution--for each year in which Deininger and Squire judge the distributional data to be of good quality. Data for 27 developing countries, with a total of 181 observations--pass the Deininger-Squire quality test as well as the "relevance" test for the approach taken in this paper. Relevance required reasonable size--only Jamaica (2.5 million) and Costa Rica (3.4 million), each included for geographical representation, have populations smaller than the 5.9 million in Honduras, the next smallest country in terms of population. The population represented in the sample totaled more than 3.3 billion in 1995, or two-thirds of the total population of the low and middle income countries, as classified by the World Bank (1997).

In view of the motivating hypothesis that the rural economy is likely to have especially important linkages to incomes of the poor, all countries included in the sample have significant agricultural sectors. The least important is the 5 percent of GDP contributed by the agricultural sector of Venezuela in 1990, but the average for the countries is 25 percent. Perhaps more telling, the average share of agricultural workers in the overall labor force is 51 percent in this sample, reflecting the importance of the sector in employment and income generation for the poor.

The sample is also reasonably representative of the developing world. If population share is the criterion, the 10 countries from Latin America with 57 observations over-represent that region, and Africa, East Asia, and South Asia are somewhat under-represented. If regional GDP is the criterion, South Asia is over-represented and Latin America is under-represented. Only Africa is significantly under-represented in the sample if a simple average of these two criteria is used (see Table 1). The data themselves are shown in Appendix A.

In summary, the data set consists of 181 observations from 27 countries over a time period that extends from 1960 to 1992. The most observations for individual countries are for India, Brazil, China, Taiwan, and Korea, with 22, 15, 12, 12, and 11 observations respectively. For Chile, Dominican Republic, Guatemala, Honduras, Morocco, Tunisia, and Uganda, just two observations each are available, the minimum needed for the

Table 1. - - Basic Data

Country and Regional Group	Country Codes	# of Obs	1995 Pop (millions)	1995 GDP per capita USD	1995 GDP per capita PPP$	1995 GDP (billion PPP$)	Avgerage Relative Income Gap*	Avg. GNP growth p.c. 1965-1985	Avg. GNP growth p.c. 1985-1995
Latin America									
Brazil	BRA - 28	15	159.2	3,640	5,400	860	2.99	4.3	-0.8
Chile	CHL - 37	2	14.2	4,160	9,520	135	2.57	-0.2	6.1
Columbia	COL - 42	7	36.8	1,910	6,130	226	2.63	2.9	2.6
Costa Rica	CRI - 45	7	3.4	2,610	5,850	20	2.52	1.4	2.8
Dom. Republic	DOM - 56	2	7.8	1,460	3,870	30	2.35	2.9	2.1
Guatemala	GTM - 81	2	10.6	1,340	3,340	35	2.81	1.7	0.3
Honduras	HND - 86	2	5.9	600	1,900	11	2.90	0.4	0.1
Jamaica	JAM - 99	5	2.5	1,510	3,540	9	2.14	-0.7	3.6
Mexico	MEX - 127	6	91.8	3,320	6,400	588	2.81	2.7	0.1
Venezuela	VEN - 202	9	21.7	3,020	7,900	171	2.22	0.5	0.5
East & SE Asia									
China	CHN - 38	12	1,200.2	620	2,920	3,505	1.53	4.8	8.3
Indonesia	IDN - 90	7	193.3	680	3,800	735	1.72	4.8	6.0
S. Korea	KOR - 108	11	44.9	9,700	11,450	514	1.76	6.6	7.7
Malaysia	MYS - 140	5	20.1	3,890	9,020	181	2.56	4.4	5.7
Philippines	PHL - 156	5	68.6	1,050	2,260	155	2.49	2.3	1.5
Taiwan	OAN - 151	12	21.0	11,236	13,240	291	1.49	-	-
Thailand	THA - 188	8	58.2	2,740	7,540	439	2.39	4.0	8.4
South Asia									
Bangladesh	BGD - 19	9	119.8	240	1,380	165	1.75	0.4	2.1
India	IND - 92	22	929.4	340	1,400	1,301	1.64	1.7	3.2
Sri Lanka	LKA - 116	8	18.1	700	3,250	59	2.04	2.9	2.6
Pakistan	PAK - 153	9	129.9	460	2,230	290	1.59	2.6	1.2
Africa									
Ivory Coast	CIV - 39	4	14	660	1,580	22	1.98	0.9	-4.6†
Ghana	GHA - 72	3	17.1	390	1,990	34	1.80	-2.2	1.4
Morocco	MAR - 122	2	26.6	1,110	3,340	89	1.98	2.2	0.9
Tunisia	TUN - 193	2	9	1,820	5,000	45	2.09	4.0	1.9
Uganda	UGA - 196	2	19.2	240	1,470	28	1.87	-2.6	2.7
Other									
Turkey	TUR - 194	3	61.1	2,780	5,580	341	2.58	2.6	2.2

*(Per capita income in Quintile V minus per capita income in Quintile I) divided by average per capita income, all in $PPP.

†1985-1994.

statistical procedure used here. A number of important variables from this data set are illustrated graphically in time series form, country by country, in Appendix B.

The Statistical Approach

By merging data on shares of income (or, more commonly, expenditures) by quintile from the Deininger-Squire data base with time series data on real per capita incomes in purchasing power parity equivalents from the Penn World Tables (Summers and Heston, 1991, with 1996 update), it is possible to generate for each observation in the sample the per capita income in each quintile. Most researchers have used such data to calculate growth rates for the incomes of the bottom twenty or forty percent of the income distribution, with the time period of the calculation determined by data availability for each country in the sample (Deininger and Squire, 1996; Ravallion and Chen, 1997; Roemer and Gugerty, 1997; Gallup, Radelet, and Warner, 1997). In what is now the standard approach to explaining the factors that cause economic growth, these growth rates are regressed on a variety of factors--structural, institutional, political, and economic--that help to explain their variation (Barro and Sala-i-Martin, 1995).

The approach here is different. Advantage is taken of the panel nature of the data to estimate a fixed-effects model of per capita income in each country for each year data on income distribution are available. The income data are meant to be comparable because they are in purchasing-power-parity dollars, so merging the data in this form is a promising avenue. With five observations for each country for each year of data on income distribution, multiple degrees of freedom are available to track the impact of variables on the functioning of each economy, including the impact of economic growth on income distribution itself, and vice versa.

The simplest approach replicates the spirit of the analysis conducted by Roemer and Gugerty (1997), which determined the "elasticity of connection" between growth in the overall economy and growth in per capita incomes of the poor, specified as either the

bottom twenty or forty percent of the income distribution. Table 2 presents the results of estimating this elasticity for the present data set, where the dependent variable is specified as the logarithm of the per capita income of each quintile and the independent variable is the logarithm of average per capita income for the entire economy (Log Avg Y). The estimating equation also includes "fixed effects," separate dummy variables for each country in the sample (excluding Ghana, whose impact is included in the intercept term), as well as separate dummy variables for data from the 1960s, the 1970s, and the 1980s (thus accounting for high R^2 for each quintile regression). The impact of data from the 1990s is also included in the intercept term. Table 2 reports how many of these fixed effects coefficients are significant in each regression. Details of each regression, one for each income quintile, are shown in Appendix C.

It is obvious from basic national income accounting identities that the sum of the elasticities for the five quintiles should equal one when each elasticity is weighted by the share in national income of the respective quintile. Table 2 also presents in Panel B the results of estimating a complete system of all five equations that imposes this "adding up" constraint. It is a reassuring test of the quality of the data that the weighted sum of the unconstrained elasticities reported in Table 2 totals 0.989, not significantly different from 1.0. Imposing the adding-up constraint changes the individual elasticities very little. Panel C reports that only in quintile IV does the coefficient change by as much as two percent.

Interestingly, not all five elasticities are equal to one. As Figure 2 shows, the elasticity for the poorest quintile is only 0.8 (and is significantly less than one), with the value rising steadily to slightly greater than one for the richest quintile. Despite its unfamiliar shape, Figure 2 can be interpreted as part of a Kuznets curve, the "early" part when income distribution deteriorates with rising incomes. The curve in Figure 2 was generated by the structure of economic growth in a representative sample of developing countries, and shows clearly that the distribution of income worsened as a result of this growth process.

Table 2. - - Estimates of the "Elasticity of Connection" between average per capita income (in $PPP) and per capita income by quintile.

Panel A: Sum of Weighted Elasticities Not Constrained to Equal One.

	Quintile I (poorest)	Quintile II	Quintile III	Quintile IV	Quintile V (richest)
Constant	0.408	-0.206	-0.080	0.097	0.622
(t)	(0.8)	(0.3)	(0.3)	(0.2)	(3.2)
Log Avg Y	0.790	0.948	0.975	0.992	1.022
(t)	(11.4)	(21.2)	(27.4)	(11.5)	(36.6)
Countries*	12	14	12	1	15
Decades*	2	0	0	0	0
$\hat{R}^2$	0.909	0.966	0.981	0.907	0.993

Panel B: Sum of Weighted Elasticities Constrained to Equal One.

Constant	0.343	-0.292	-0.179	-0.011	0.588
(t)	(0.973)	(0.8)	(0.5)	(0.0)	(3.0)
Log Avg Y	0.800	0.961	0.990	1.012	1.029
(t)	(15.8)	(19.3)	(20.3)	(21.8)	(38.5)
Countries*	16	12	9	4	12
Decades*	2	0	0	0	0
$\hat{R}^2$	0.908	0.966	0.981	0.907	0.993

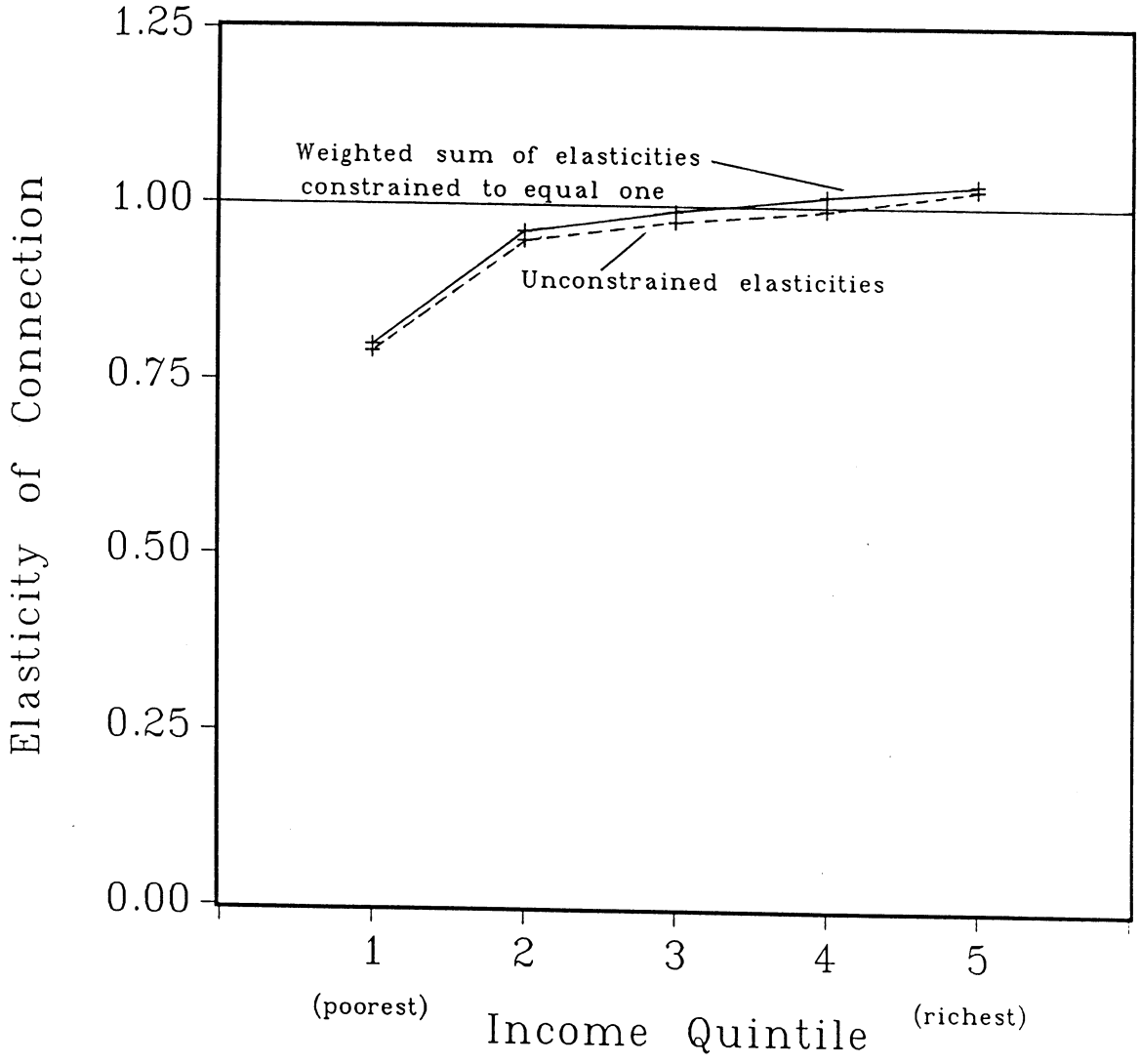
Panel C: Percent Change in "Elasticity of Connection" Due to Constraining the Weighted Sum of the Elasticities to Equal One.

Percent Change	1.27%	1.37%	1.54%	2.02%	0.68%

*Numbers for "Countries" and "Decades" indicate the number of variables in each category significant at 10 percent or higher.

SOURCE: Author's estimates from data in Deininger and Squire (1996).

Figure 2.--"Elasticity of Connection" between average per capita income (in $PPP) and per capita income by quintile



SOURCE: Data in Table 2.

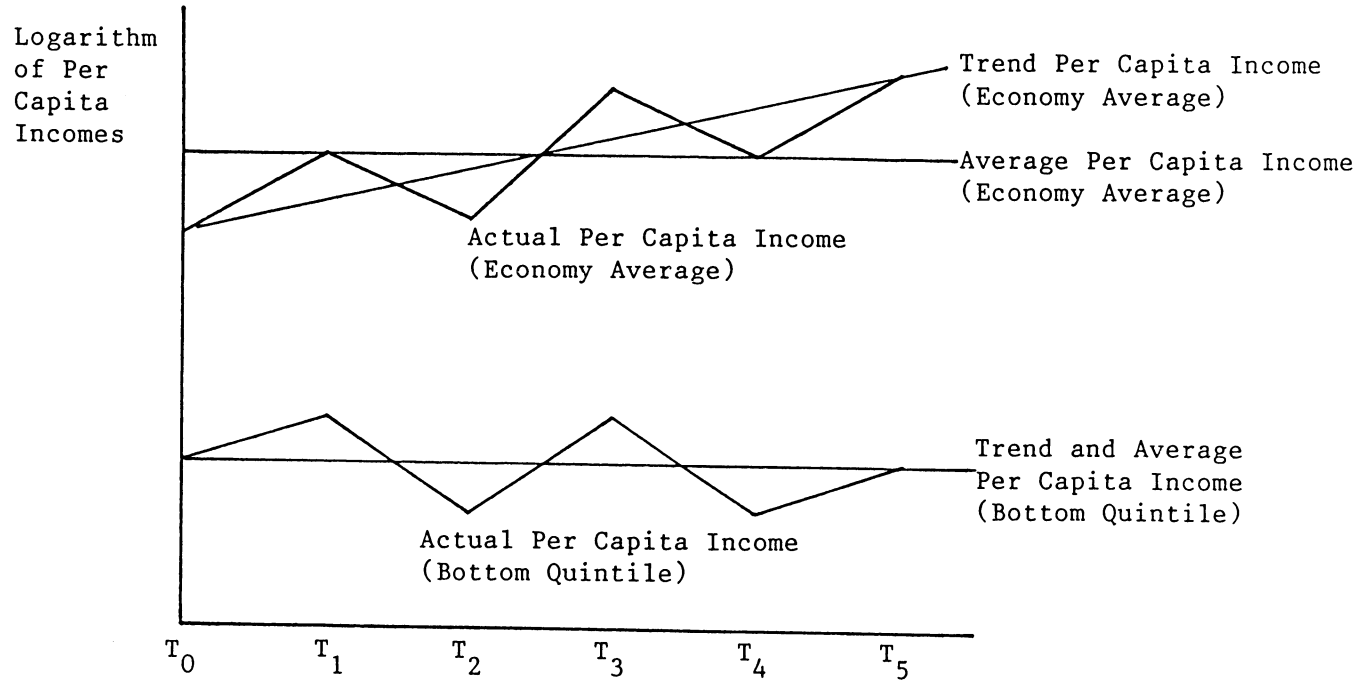
Indeed, as a hypothetical example to be used throughout the rest of the discussion, if economic growth of five percent per year was maintained for 25 years, the elasticities shown in Figure 2 would produce a significant skewing of income distribution. As one indicator, the ratio of incomes in the top quintile to those in the bottom, 7.8 at the beginning of the growth exercise, would deteriorate to 10.3 by the end of the 25 years.

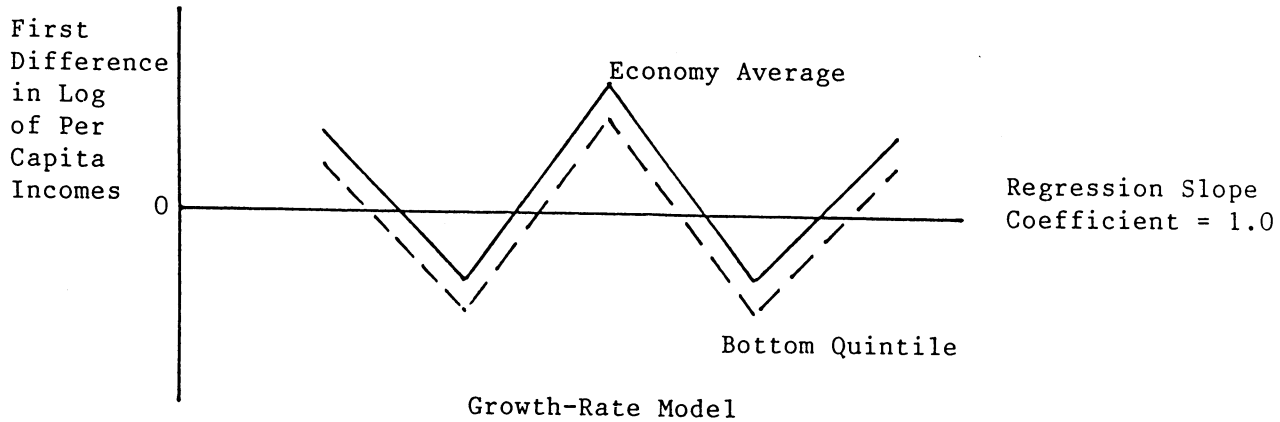
Why do these results seem to be at odds with earlier findings that there is nearly a one-to-one relationship between economic growth and incomes of the poor, an apparent rejection of the Kuznets curve? The answer lies in the underlying growth model that motivates the different statistical approach used to obtain the results reported here, and how this model contrasts with the growth model underlying statistical analysis using growth rates.

Consider the stylized economy shown in Figure 3. The top panel shows the logarithm of per capita incomes over time for both the national average and the bottom quintile. Average per capita incomes grow steadily along a trend, with a "white noise" error term each year caused by exogenous shocks from weather, variable inflation, surprises in the external terms of trade, and so on. By contrast, and to make the story clear and dramatic, the per capita incomes of the bottom quintile are assumed not to grow at all on trend. However, the incomes of the bottom quintile, or, more accurately, their expenditures, suffer exactly the same relative shocks as the overall economy suffers. In this hypothetical economy, then, the poor are entirely disconnected from the long-run growth process, but do feel the short-run shocks to the macro economy. Although the contrasts are starkly drawn for the purposes of illustrating the analytical point, it is not too difficult to think of worlds that would resemble this setting.

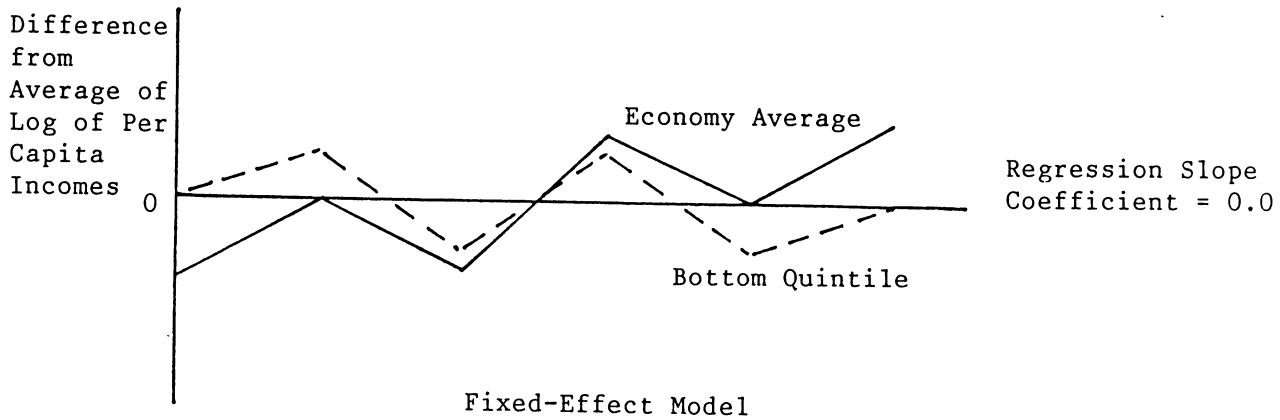
The second panel in Figure 3 shows how the data on economic growth would look to a statistician seeking to explain any connection between overall income growth and growth in the incomes of the poor. This panel plots the change in the logarithm of per capita income, which is equal to the growth rate (shown in the top panel), for each time period, for both the average and the bottom quintile. A regression of the rate of growth

Figure 3.--Implications of Using Growth-Rate Models versus Fixed-Effect Models to Estimate the Connection Between Growth in Average Incomes Per Capita and Income of the Poor





Growth-Rate Model



Fixed-Effect Model

in per capita income of the bottom quintile on the rate of growth in average per capita income would show an "elasticity of connection" of exactly one, with a negative intercept equal to the difference in the trend rates of growth. That is, a model based on growth rates is implicitly a model of first differences, and such a model automatically removes differences in trends of the two variables and places that difference in the intercept term.

The third panel in Figure 3 shows how the data would appear to a statistician using the fixed-effects model based on income levels rather than growth rates. That is, each year's observation is the difference between the actual per capita income, on average or for the lowest quintile, and the overall average for that country, for all the observations available. A regression run on the data points in the bottom panel produces an "elasticity of connection" of exactly zero, which is in fact the degree to which the bottom quintile is connected to the long-run growth process. Thus the fixed-effects model is capturing the long-run connection of the poor to the growth process, whereas the growth rate model captures the extent to which the poor are connected to short-run shocks buffeting the overall economy.

In this sense, and following a similar argument in Datt and Ravallion (1997), the "connection" coefficient in the growth rate model is actually capturing the extent to which the poor are able to buffer their incomes from macroeconomic shocks. The test is actually more telling when the quintile data are based on expenditures (nearly always) rather than incomes, because then the interpretation is a test of how well the poor are able to insure their consumption levels in the face of fluctuating incomes. A coefficient of one, the common result from these studies, suggests the poor are completely unable to stabilize their consumption path in the face of unstable incomes. This failure of the poor to self-insure against consumption risks is likely to have profound welfare consequences (Morduch, 1994).

Neither model is "right" or "wrong." They are asking different questions from the same data base. For understanding the issue in this paper, how well the poor connect to the long-run process of economic growth, the fixed-effects model offers more insights. It

better captures the structure of the economies being examined than does the growth-rate model. Indeed, the approach used here has the potential to reveal how structural forces in an economy influence the distribution of income during the long-run process of economy growth, a potential ironically missing from the growth-rate models.

Two steps are possible for testing this potential and they are tried sequentially in the following sections. A final section speculates about the political economy implications of the findings and points toward further research needed to clarify these issues.

The Impact of Income Distribution on the Distribution of Growth

At one level, it would seem to be a tautology that the distribution of income will affect the distribution of growth in incomes. Upon reflection, of course, the connection is not so obvious. For example, Gallup, Radelet and Warner (1997) find that the initial level of per capita income in the lowest quintile is negatively associated with growth in income for that quintile. Although some of this effect may be simple regression to the mean caused by measurement error in the quintile shares, part of it may be due to a genuine convergence effect that tends to reduce skewing in the distribution of income, both within and across countries. The convergence effect--based on the logic of the neoclassical Solow growth model--provides an alternative, and contradictory, mechanism to the more popular view that "it takes money to make money." In this view, traceable to the Bible and Adam Smith, a skewed income distribution is likely to be self-reinforcing over time, as only the rich can accumulate assets that provide faster income growth than comes from wage labor.

Which mechanism is dominant is an empirical issue. The test here relies on the "self-reinforcing" logic of the asset distribution mechanism sketched above. A variable is constructed that measures the relative income gap between the rich and the poor, and this variable is then used to define a dummy variable that is equal to one when the observation reflects a highly unequal distribution of income. Specifically, the per capita

the top quintile, and this "income
r that particular observation.
large as average income--the

ns that produced Figure 2
re little changed, but in general
he income gap is relatively
. In the bottom quintile the shift
in the next two quintiles. The
e highest quintile experiences a
t much more than accounting to
des of the changes by quintile.

es to shift as well as the intercept
s. By and large, the results are
fficient of most interest, the shift
vel. The negative direction of
e not just poor, they are not
t of the economy as their poor
result consistent with those

t the underlying structure that
come gaps to generate
tile. The obvious starting point
to its agricultural and non-
nces can be traced to basic
1993; Timmer, 1995). The next
ions to the disaggregation by
startling.

The "Elasticity of Connection" from Agriculture and Non-Agriculture

National income data are generally reported by sectoral origin of gross domestic product (GDP). These data can be used to calculate the share of GDP originating each year in agriculture and non-agriculture. For the countries and years in the data set used here, 25 percent of GDP originated from the agricultural sector on average, with 75 percent from non-agriculture.

From the data set on agricultural labor force recently constructed by Larson and Mundlak (1997), it is also possible to estimate the share of the total labor force working in agriculture for each country and year. Again, for this sample, the average was 51 percent. These data, when combined with data on share of GDP from agriculture and the PPP estimates of average real per capita income used earlier, can be used to construct estimates of agricultural GDP per agricultural worker, which serve as a proxy for per capita productivity of workers in this sector. Simple accounting identities permit construction of a similar series for non-agricultural workers. On average, agricultural GDP per capita is PPP$1,021 per year compared with average GDP per capita of PPP$2,393. Since 51 percent of the labor force is in agriculture on average, non-agricultural GDP per capita works out to PPP$3,636. On average, agricultural workers produce less than a third of what workers outside of agriculture produce. This relatively low productivity is a structural characteristic of nearly all poor countries, and raising it is a key source of growth during the structural transformation (Kuznets, 1955; Timmer, 1988).

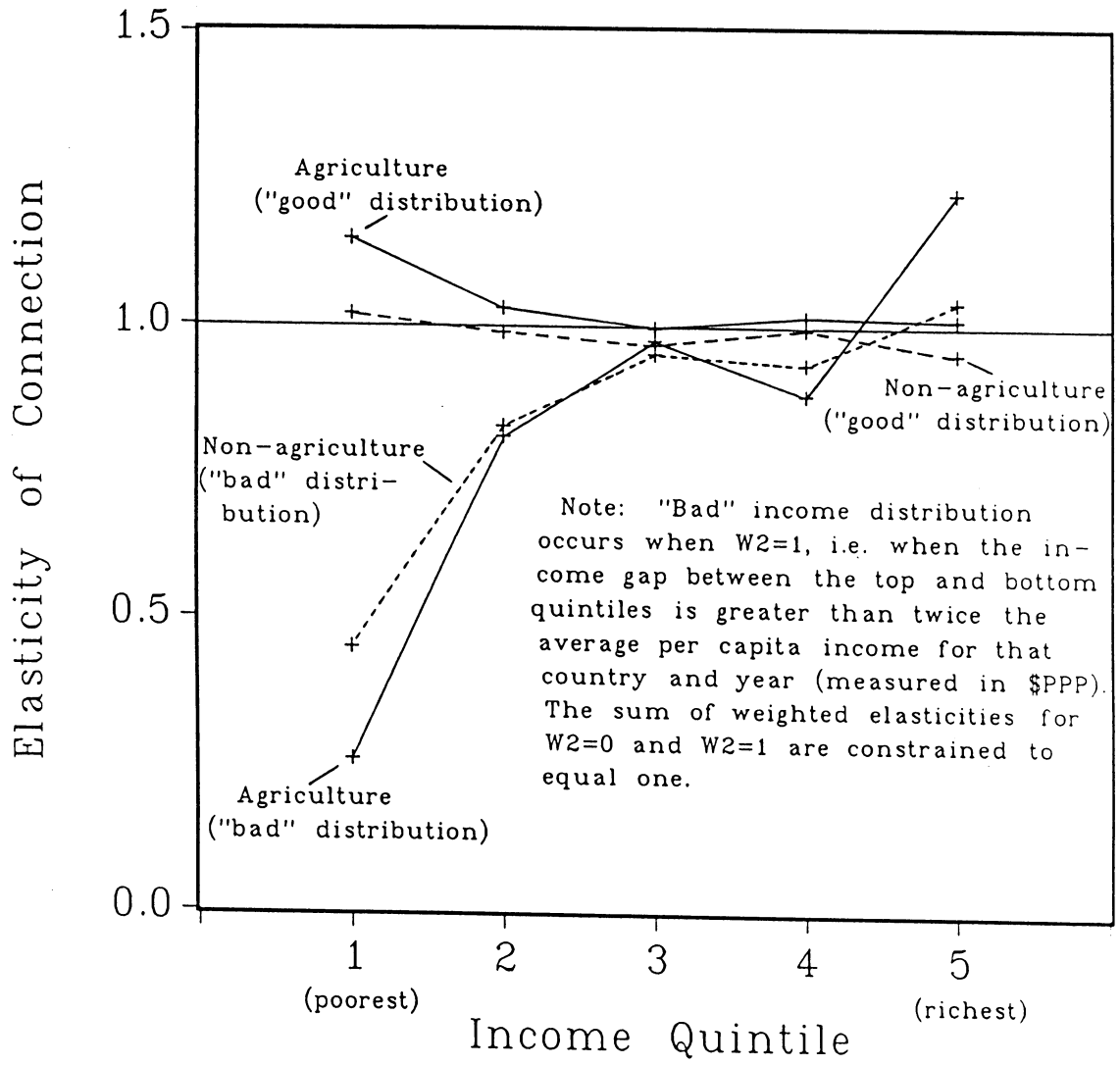
The question to be examined is whether the sectoral composition of labor productivity matters in a significant way to incomes earned by each quintile. Preliminary results from asking a similar question have already indicated that growth in the agricultural sector seems to have a much larger impact on growth of incomes in the bottom quintile than growth in services or industry (Ravallion and Datt, 1996; Gallup, Radelet, and Warner, 1997). The question here is framed in terms of relative labor

productivities. When weighted by their share in the labor force, do the per capita labor productivities of workers in agriculture and non-agriculture have differential effects on the average earnings in each income quintile (Timmer, 1996b)?

Figure 4 shows the startling results promised above. The disaggregation into "good" and "bad" levels of the relative income gap is maintained in the regressions that provide these results. That is, elasticity "shifters" are included for both the agricultural and non-agricultural coefficients, and they are highly important for understanding the underlying structure and dynamics of the countries in this sample (see Table 3. Full statistical results are presented in Appendix D). Two fundamentally different growth processes seem to be at work with respect to the roles of labor productivity in agriculture and non-agriculture, and how these affect incomes in each of the five quintiles of the income distribution.

In countries where the income gap is relatively small, labor productivity in agriculture is slightly but consistently more important in generating incomes in each of the five quintiles. Furthermore, agricultural productivity has a noticeable "anti-Kuznets" effect in these countries. Using the results in Panel B of Table 3, where weighted elasticities are constrained to add up to one for each of the sub-samples, the elasticities of connection for the bottom two quintiles average 1.087, about 8 percent greater than the average for the top three quintiles of 1.005. A similar "anti-Kuznets" effect is seen from the non-agricultural sector and this impact is even more important to the poor because the non-agricultural sector makes up, on average, 75 percent of the overall economy. It also has the capacity to grow significantly faster than the agricultural economy over sustained periods of time. A simple regression explaining the elasticities of connection as a function of a dummy variable when sectoral growth is from agriculture as well as the quintile and quintile squared shows that agricultural growth raises the average contribution to growth for the five quintiles by 5.5 percentage points. The elasticities decline in the quadratic specification until the fifth quintile, confirming the "anti-Kuznets" effect for the sample of developing countries with relatively good distributions of income (see Appendix E).

Figure 4.--"Elasticity of Connection" between labor productivity in agriculture and non-agriculture and income per capita by quintile, for "good" and "bad" income distributions



SOURCE: Data in Table 3

Table 3. - - Estimates of the "Elasticity of Connection" between per capita income by quintile and average per capita income (in $PPP) for agriculture and non-agriculture separately, for countries with "good" and "bad" distribution of income.[1]

Panel A: Sum of Weighted Elasticities Not Constrained to Equal One

	Quintile I (poorest)	Quintile II	Quintile III	Quintile IV	Quintile V (richest)
Constant	-1.695	-0.712	-0.235	-0.120	0.578
(t)	(1.6)	(1.0)	(0.4)	(0.1)	(1.0)
Log Ag Y	1.160	1.049	1.021	1.050	1.073
(t)	(6.2)	(8.0)	(9.2)	(4.1)	(10.6)
Log Non-Ag Y	1.026	0.999	0.981	1.012	0.988
(t)	(9.2)	(12.9)	(14.9)	(6.6)	(16.5)
W2	5.096	1.306	0.169	0.801	-0.724
(t)	(3.5)	(1.3)	(0.2)	(0.4)	(0.9)
W2*Log Ag Y	-0.900	-0.238	-0.043	-0.161	0.181
(t)	(3.6)	(1.3)	(0.3)	(0.5)	(1.3)
W2*Log Non-Ag Y	-0.576	-0.172	-0.027	-0.074	0.071
(t)	(3.8)	(1.6)	(0.3)	(0.4)	(0.9)
Net when W2=1					
[Ag]	[0.260]	[0.811]	[0.978]	[0.889]	[1.254]
[Non-Ag]	[0.450]	[0.827]	[0.954]	[0.938]	[1.059]
Countries*	12	18	16	3	24
Decades*	1	1	1	0	3
$\hat{R}^2$	0.922	0.966	0.978	0.904	0.989

/ continued . . .

Table 3. - - Continued.

Panel B: Sum of Weighted Elasticities Constrained to Equal One

	Quintile I (poorest)	Quintile II	Quintile III	Quintile IV	Quintile V (richest)
Constant	-1.622	-0.598	-0.085	0.084	0.944
(t)	(2.1)	(0.8)	(0.1)	(0.1)	(2.0)
Log Ag Y	1.146	1.028	0.994	1.013	1.008
(t)	(8.4)	(7.7)	(7.9)	(8.1)	(11.7)
Log Non-Ag Y	1.018	0.987	0.965	0.991	0.949
(t)	(12.6)	(12.5)	(12.5)	(13.4)	(18.1)
W2	5.032	1.213	0.054	0.653	-0.920
(t)	(4.8)	(1.2)	(0.1)	(0.7)	(1.6)
W2*Log Ag Y	-0.889	-0.221	-0.022	-0.135	0.216
(t)	(4.8)	(1.2)	(0.1)	(0.8)	(2.1)
W2*Log Non-Ag Y	-0.569	-0.163	-0.015	-0.059	0.090
(t)	(5.2)	(1.5)	(0.1)	(0.6)	(1.5)
Net when W2=1					
[Ag]	[0.257]	[0.807]	[0.972]	[0.878]	[1.224]
[Non-Ag]	[0.449]	[0.824]	[0.950]	[0.932]	[1.039]
Countries*	15	16	13	15	22
Decades*	1	1	1	1	3
$\hat{R}^2$	0.922	0.966	0.978	0.904	0.989

*Numbers for "Countries" and "Decades" indicate the number of variables in each category that are significant at 10 percent or higher.

[1] Agricultural value added per agricultural worker, in $PPP, is used as a proxy for agricultural income and similarly for non-agriculture. The dummy variable W2 is set equal to one when the gap between per capita income of the top quintile and the bottom quintile exceeds twice the average per capita income, for that particular country and time period.

SOURCE: Author's estimates from data in Deininger and Squire (1996).

The contrast with countries where the relative income gap is large--more than twice the average per capita income--is striking. In the poorest quintile, workers are virtually disconnected from the national economy. A 95 percent confidence interval includes zero for both sectors! The elasticity of connection rises sharply by income class and exceeds one for the top quintile. A regression similar to the one above shows no difference in the contribution from agriculture, and the elasticities rise significantly by quintile for all five groups (see Appendix E).

For countries with large income gaps, the "early" (and discouraging) part of the Kuznets curve is a dramatic reality of their economies. And growth in agricultural productivity is no more successful in alleviating poverty than growth in the non-agricultural economy. Indeed, the rich benefit considerably from agricultural growth in countries with large income gaps, no doubt because of highly skewed distributions of land. But neither sector reaches the poor very effectively.

These contrasting structures have immediate implications for the distribution of economic growth. Maintaining the previous experiment of an economy growing by 5 percent per year in per capita terms, for 25 years, it is possible to show the impact. Assume that agriculture grows by 3 percent per year in per capita terms, and non-agriculture grows fast enough for the overall economy to maintain its 5 percent growth rate each year. Because the share of agriculture will decline during this growth process--from 25 percent of GDP to 15 percent, as it turns out--the non-agricultural sector grows somewhat faster at the beginning than at the end. The average for the 25-year period is 5.5 percent per year per capita and the average share of agriculture over the period is 20 percent.

In economies with relatively small income gaps between rich and poor, this growth process increases the per capita incomes of the bottom quintile by 241 percent after 25 years. Incomes in the top quintile increase by 211 percent, so the "top quintile/bottom quintile" ratio actually falls from 5.10 to 4.65. The contrast with the growth process in economies with wide income gaps is stark. Incomes of the bottom quintile increase by just

73 percent over the 25 years, whereas incomes in the top quintile increase by 273 percent! The "top/bottom" ratio deteriorates from 13.1 at the start to 28.4 at the end. If these countries could sustain such rapid economic growth for 25 years, they would end up with a distribution of income about as bad as that in Brazil.

Insights on the Political Economy of Growth

These results raise intriguing possibilities about the political sustainability of rapid economic growth. Consider the same 25-year experiment with the distribution of economic growth conducted when the results were not disaggregated. Then the ratio of incomes in the top to bottom quintile rose from 7.8 to 10.3. Now it can be seen that the results depend dramatically on what kind of economy is growing. When the relative income gap is less than twice the level of average per capita incomes, economic growth is roughly equal in all income quintiles and is especially stimulated by growth in agricultural productivity (see Figure 4).

Alternatively, when the relative income gap exceeds twice the average per capita income, the poor are nearly left out of the growth process altogether, and agriculture is no more effective in reaching them than non-agriculture. These results suggest that the relatively good income distributions in some countries of East, Southeast, and South Asia produce a growth process that is more sustainable than in countries with highly skewed income distributions. The reasons are almost certainly political and may hinge importantly on the extent of political liberties and flexibility in the labor market. Economies with few political choices, low and stagnant labor productivity in agriculture, and structural rigidities in moving that labor to more productive sectors are likely to find a visibly growing income gap between the rich and the poor to be more destabilizing than in economies that are open and flexible (A. Timmer, 1997).

Evidence from the record of economic growth from 1965 to 1985 and from 1985 to 1995 provides a rough confirmation of this line of speculation (see Table 4). When the

difference in the rate of growth of per capita incomes between these two periods (GRDIFF, data from World Bank, 1987, 1997) is regressed on the average relative size of the income gap for each country (RELGAP, data from Table 1), the result is a large, negative coefficient that is significant at the one percent level. Controlling for the (logarithm of the) level of per capita income at the end of the period (LPCYPPP) and the growth rate in the first period (GR6585), a larger income gap is significantly associated with a sharp slowdown in the rate of economic growth from the first to the second period. Richer countries experience a smaller slowdown than poorer countries, suggesting that it is possible to "buy" political stability (A. Timmer, 1997). And controlling for the other two factors, a faster rate of economic growth in the first period is also associated with a slower rate in the second, suggesting that there is considerable "luck of the draw" in individual growth rates.

These political economy insights suggest that changes in relative incomes are more likely to influence political stability than changes in the degree of absolute poverty. Because Gini coefficients and "top quintile/bottom quintile" ratios rarely blend easily into populist speeches, the more visible measure of inequality is the gap between the rich and the poor. For the empirical analysis conducted here, this gap is measured by the difference between the incomes of the top and bottom quintiles and, because the data actually report on expenditure patterns rather than income patterns, this gap is likely to be quite visible to most citizens, at least in urban areas.

This measure of the relative gap is positively associated with the level of per capita incomes, confirming the "early" stage of the Kuznets curve for the countries in this sample (see Table 4, Panel B). For the countries and time period examined here, there is a very clear and significant tendency for the gap to widen with higher incomes per capita. Interestingly, countries able to grow fastest from 1985 to 1995 were associated with a narrowing of the income gap. This result again suggests the importance of the income gap to sustaining the growth process.

Table 4.--Impact of Relative Income Gap on Sustainability of Economic Growth

Panel A

LS // Dependent Variable is GRDIFF
Date: 12-20-1997 / Time: 16:22
SMPL range: 1 - 26
Number of observations: 26

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-12.679502	6.9472017	-1.8251236	0.0816
RELGAP	-3.5666252	1.2305196	-2.8984708	0.0083
LPCYPPP	2.7830532	0.9864252	2.8213524	0.0099
GR6585	-0.8505806	0.2598316	-3.2735837	0.0035

R-squared	0.411680	Mean of dependent var	0.511538
Adjusted R-squared	0.331455	S.D. of dependent var	2.899838
S.E. of regression	2.371041	Sum of squared resid	123.6804
Log likelihood	-57.16726	F-statistic	5.131546
Durbin-Watson stat	1.660520	Prob(F-statistic)	0.007665

Panel B

LS // Dependent Variable is RELGAP
Date: 12-20-1997 / Time: 19:44
SMPL range: 1 - 26
Number of observations: 26

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	-1.3433654	0.9639306	-1.3936329	0.1768
LPCYPPP	0.4589901	0.1200291	3.8239916	0.0009
GR8595	-0.0820610	0.0256799	-3.1955312	0.0040

R-squared	0.433989	Mean of dependent var	2.219615
Adjusted R-squared	0.384770	S.D. of dependent var	0.440804
S.E. of regression	0.345751	Sum of squared resid	2.749510
Log likelihood	-7.685642	F-statistic	8.817621
Durbin-Watson stat	0.986970	Prob(F-statistic)	0.001437

GRDIFF = Difference in rate of economic growth per capita between 1965-85 and 1985-95
RELGAP = Per capita income in Quintile V minus per capita income in Quintile I, divided by average per capita income, all in $PPP.
LPCYPPP = Logarithm of per capita income in 1995, in $PPP.
GR6585 = Rate of growth of per capita incomes from 1965 to 1985.
GR8595 = Ditto, from 1985 to 1995.

The evidence presented here suggests that a gap that is twice as large as the average per capita income is an effective dividing line between societies with "good" and "bad" income distributions, with sharply different growth processes in the two types of economies. The dividing line is not particularly sensitive to a gap that is exactly 2.0 times the average income per capita. When all the results were re-estimated with values of 1.9 and 2.1, there was little change in the basic patterns. Large changes, to 1.5 or 2.5 for example, produce more significant changes in the results, partly because the sample size for the smaller sub-sample becomes too small to have much confidence in the coefficients. It is reasonable to conclude that when the income gap between the top and bottom quintiles exceeds twice the average per capita income, it is large enough for citizens to notice and to affect the political economy of the growth process.

The apparent failure of economic growth to reach the poor in precisely those environments where the connection would seem to be most crucial is clearly disappointing, but should not be taken as a council of despair or a general indictment of economic growth itself. Even in societies that start with a wide income gap, growth has a positive, although small, impact on the poor, and failure to grow will certainly hurt the poor. More positively, visible and pro-active measures to reach the poor as a concomitant part of trade opening, structural adjustment, and privatization programs designed to speed economic growth will help to sustain the growth-friendly initiatives. Perhaps the failure to sustain rapid economic growth in countries with wide (and widening) income gaps is no mystery when viewed in the context of these results.

References

Alesina, Alberto, and Roberto Perotti. 1993. "Income Distribution, Political Instability, and Investment." Cambridge, MA: National Bureau of Economic Research (NBER) Working Paper no. 4486, October.

Anand, Sudhir, and S. M. R. Kanbur. 1993. "The Kuznets Process and the Inequality-Development Relationship." *Journal of Development Economics.* vol. 40, no. 1, pp. 25-52.

Barro, Robert J., and Xavier Sala-i-Martin. 1995. *Economic Growth.* New York: McGraw-Hill.

Birdsall, Nancy, David Ross, and Richard Sabot. 1995. "Inequality and Growth Reconsidered: Lessons from East Asia." *World Bank Economic Review*, vol. 9, no. 3, pp. 477-508.

Dasgupta, Partha. 1993. *An Inquiry into Well-Being and Destitution.* Oxford: Clarendon Press.

Datt, Guarav, and Martin Ravallion. 1997. "Why Have Some Indian States Done Better Than Others at Reducing Rural Poverty?" *Economica*, vol. 64.

Deininger, Klaus, and Lyn Squire. 1996. "A New Data Set Measuring Income Inequality." *The World Bank Economic Review.* vol. 10, no. 3 (September), pp. 565-591. Data available at
http://www.worldbank.org/html/prdmg/grwthweb/growth_t.htm

Fields, Gary S. 1997. "Poverty, Inequality, and Economic Well-Being: African Economic Growth in Comparative Perspective," Paper prepared for presentation to the African Economic Research Consortium, Nairobi, Kenya, August, mimeo.

Fogel, Robert. 1994. "Economic Growth, Population Theory, and Physiology: The Bearing of Long-Term Processes on the Making of Economic Policy." [Nobel Prize Lecture] *American Economic Review*, vol. 84, no. 3 (June), pp. 369-395.

Gallup, John, Steven Radelet, and Andrew Warner. 1997. "Economic Growth and the Income of the Poor." Harvard Institute for International Development. Prepared for the CAER II Project, August, mimeo.

Kuznets, Simon. 1955. "Economic Growth and Income Inequality." *American Economic Review.* vol. 49, no. 1, pp. 1-28.

Lewis, W. Arthur. 1954. "Economic Development with Unlimited Supplies of Labor." *The Manchester School.* vol. 22, pp. 3-42.

Larraín B., Felipe, and Rodrigo Vergara M. 1997. "Income Distribution, Investment, and Growth," Development Discussion Paper No. 596, August, Harvard Institute for International Development, Cambridge, MA, pp. 24.

Larson, Donald, and Yair Mundlak. 1997. "On the Intersectoral Migration of Agricultural Labor." *Economic Development and Cultural Change.* vol. 45, no. 2 (January), pp. 295-319.

Morduch, Jonathan. 1994. "Poverty and Vulnerability," *American Economic Review: Papers and Proceedings*, vol. 84, no. 2 (May), pp. 221-5.

Perotti, Roberto. 1996. "Growth, Income Distribution, and Democracy: What the Data Say." *Journal of Economic Growth*, pp. 149-88.

Ravallion, Martin. 1996. "Can High-Inequality Developing Countries Escape Absolute Poverty?" Policy Research Department, Mimeo, World Bank, Washington, DC., mimeo.

_____ and Shaohua Chen. 1997. "What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty?" *The World Bank Economic Review*, vol. 11, no. 2, pp. 357-82.

_____ and Guarav Datt. 1996. "How Important to India's Poor Is the Sectoral Composition of Economic Growth?" *The World Bank Economic Review*, vol. 10, no. 1, pp. 1-25.

Roemer, Michael, and Mary Kay Gugerty. 1997. "Does Economic Growth Reduce Poverty?" CAER II Discussion Paper No. 4 (April). Cambridge, MA: Harvard Institute for International Development, pp. 42.

Summers, Robert, and Alan Heston. 1991 (updated 1996). "The Penn World Table (Mark 5): An Expanded Set of International Comparisons, 1950-1988." *Quarterly Journal of Economics.* vol. 106, no. 2 (May), pp. 327-68.

Timmer, Ashley S. 1997. "Exit Options and Political Stability." Paper presented to the Harvard/MIT Research and Training Group (RTG) Seminar in Positive Political Economy, October, pp. 33, mimeo.

Timmer, C. Peter. 1988. "The Agricultural Transformation." In Hollis Chenery and T. N. Srinivasan, eds., *Handbook of Development Economics, Vol. 1*, Amsterdam: North-Holland, pp. 275-331.

_____. 1995. "Getting Agriculture Moving: Do Markets Provide the Right Signals?" *Food Policy*, vol. 20, no. 5 (October), pp. 455-72.

_____. 1996a. "Food Security Strategies: The Asian Experience." Prepared for a conference on food security in Central America sponsored by the Food and Agriculture Organization of the United Nations, September, 1996.

_____. 1996b. "Agricultural Linkages to Economic Growth." Prepared for the Agricultural Policy Analysis Project (APAP) for the Africa Bureau of USAID, Harvard Institute for International Development, December, pp. 34, mimeo.

World Bank. 1987. *World Development Report: Barriers to Adjustment and Growth in the World Economy.* New York: Oxford University Press for the World Bank.

_____. 1993. *The East Asian Miracle: Economic Growth and Public Policy.* New York: Oxford University Press for the World Bank.

_____. 1997. *World Development Report: The State in a Changing World.* New York: Oxford University Press for the World Bank.

Appendix A

Data on Income Distribution, by Country and Year

			Share of Income to Each Quintile					Real GDP			Agriculture		
Country	Code	Year	Q1	Q2	Q3	Q4	Q5	per cap	agric.	non-ag	% of GDP	% of LF	Rel Gap
Bangladesh	BGD	1963	0.069	0.110	0.154	0.222	0.445	1066	714	2984	0.5662	0.8450	1.880
Bangladesh	BGD	1967	0.079	0.117	0.158	0.223	0.423	1162	786	2935	0.5580	0.8250	1.720
Bangladesh	BGD	1973	0.070	0.113	0.151	0.228	0.438	759	546	1543	0.5664	0.7867	1.840
Bangladesh	BGD	1977	0.071	0.122	0.169	0.229	0.409	949	618	1951	0.4890	0.7514	1.688
Bangladesh	BGD	1978	0.074	0.117	0.160	0.220	0.429	1010	738	1797	0.5425	0.7428	1.778
Bangladesh	BGD	1981	0.066	0.107	0.152	0.221	0.453	1085	596	2395	0.3999	0.7281	1.934
Bangladesh	BGD	1983	0.072	0.118	0.159	0.217	0.434	1069	600	2203	0.3968	0.7073	1.809
Bangladesh	BGD	1986	0.070	0.124	0.151	0.196	0.460	1261	752	2328	0.4041	0.6772	1.952
Bangladesh	BGD	1989	0.095	0.133	0.170	0.216	0.386	1375	789	2456	0.3720	0.6484	1.455
Brazil	BRA	1960	0.032	0.069	0.109	0.191	0.599	1780	597	3062	0.1743	0.5200	2.835
Brazil	BRA	1970	0.032	0.063	0.098	0.190	0.617	2427	667	3861	0.1235	0.4491	2.925
Brazil	BRA	1972	0.020	0.050	0.094	0.170	0.666	2899	874	4435	0.1299	0.4312	3.230
Brazil	BRA	1974	0.029	0.061	0.103	0.180	0.627	3451	1077	5129	0.1292	0.4141	2.990
Brazil	BRA	1976	0.022	0.052	0.090	0.152	0.684	3773	1234	5450	0.1300	0.3977	3.310
Brazil	BRA	1978	0.025	0.059	0.109	0.189	0.618	3881	1180	5550	0.1161	0.3820	2.965
Brazil	BRA	1979	0.026	0.057	0.099	0.178	0.640	4074	1199	5794	0.1102	0.3743	3.070
Brazil	BRA	1980	0.029	0.059	0.104	0.192	0.616	4297	1290	6039	0.1101	0.3668	2.935
Brazil	BRA	1981	0.031	0.064	0.114	0.198	0.593	3992	1222	5487	0.1074	0.3506	2.810
Brazil	BRA	1982	0.038	0.066	0.134	0.188	0.574	3965	1061	5428	0.0897	0.3351	2.682
Brazil	BRA	1983	0.024	0.057	0.107	0.186	0.626	3752	1281	4916	0.1094	0.3203	3.010
Brazil	BRA	1985	0.029	0.051	0.100	0.175	0.645	4017	1584	5023	0.1154	0.2926	3.080
Brazil	BRA	1986	0.031	0.061	0.110	0.192	0.606	4294	1713	5296	0.1116	0.2797	2.875
Brazil	BRA	1987	0.027	0.057	0.106	0.190	0.620	4319	1617	5305	0.1001	0.2673	2.965
Brazil	BRA	1989	0.025	0.049	0.092	0.183	0.652	4272	1490	5171	0.0852	0.2442	3.135
Chile	CHL	1968	0.045	0.090	0.138	0.213	0.514	3496	970	4347	0.0699	0.2520	2.345
Chile	CHL	1971	0.043	0.088	0.135	0.211	0.523	3889	1291	4699	0.0789	0.2376	2.400
China	CHN	1980	0.079	0.123	0.184	0.247	0.367	971	387	2780	0.3009	0.7558	1.437
China	CHN	1982	0.085	0.137	0.179	0.223	0.376	963	426	2587	0.3327	0.7516	1.457
China	CHN	1983	0.087	0.146	0.170	0.243	0.355	1027	453	2746	0.3304	0.7496	1.343
China	CHN	1984	0.101	0.136	0.191	0.232	0.341	1134	486	3053	0.3201	0.7475	1.199
China	CHN	1985	0.087	0.129	0.163	0.234	0.388	1262	480	3552	0.2835	0.7454	1.502
China	CHN	1986	0.076	0.119	0.160	0.259	0.386	1239	452	3520	0.2709	0.7434	1.552
China	CHN	1987	0.069	0.111	0.160	0.284	0.376	1262	456	3572	0.2679	0.7413	1.533
China	CHN	1988	0.066	0.109	0.161	0.288	0.375	1326	460	3780	0.2566	0.7393	1.546
China	CHN	1989	0.065	0.116	0.159	0.241	0.420	1352	459	3858	0.2500	0.7372	1.779
China	CHN	1990	0.070	0.119	0.161	0.240	0.410	1324	487	3647	0.2705	0.7352	1.699
China	CHN	1991	0.064	0.114	0.149	0.313	0.361	1378	459	3913	0.2446	0.7340	1.481
China	CHN	1992	0.060	0.107	0.158	0.258	0.417	1494	444	4361	0.2177	0.7320	1.782
Ivory Coast	CIV	1985	0.057	0.101	0.149	0.219	0.474	1545	649	3027	0.2618	0.6232	2.087
Ivory Coast	CIV	1986	0.070	0.106	0.149	0.213	0.462	1558	697	2953	0.2765	0.6184	1.960
Ivory Coast	CIV	1987	0.065	0.105	0.148	0.212	0.470	1522	709	2814	0.2856	0.6136	2.028
Ivory Coast	CIV	1988	0.068	0.112	0.158	0.222	0.441	1425	732	2503	0.3129	0.6088	1.865

			Share of Income to Each Quintile					Real GDP			Agriculture		
Country	Code	Year	Q1	Q2	Q3	Q4	Q5	per cap	agric.	non-ag	% of GDP	% of LF	Rel Gap
Columbia	COL	1970	0.070	0.079	0.101	0.148	0.602	2140	1298	2734	0.2509	0.4135	2.662
Columbia	COL	1971	0.041	0.070	0.115	0.197	0.577	2236	1274	2912	0.2352	0.4127	2.680
Columbia	COL	1972	0.041	0.070	0.113	0.191	0.585	2339	1371	3017	0.2413	0.4118	2.721
Columbia	COL	1974	0.047	0.089	0.133	0.199	0.532	2516	1496	3225	0.2438	0.4100	2.425
Columbia	COL	1978	0.031	0.073	0.117	0.191	0.588	2800	1587	3631	0.2304	0.4065	2.783
Columbia	COL	1988	0.037	0.080	0.125	0.199	0.559	3231	1954	3720	0.1675	0.2769	2.610
Columbia	COL	1991	0.036	0.088	0.129	0.204	0.544	3300	2217	3651	0.1646	0.2450	2.538
Costa Rica	CRI	1961	0.062	0.076	0.095	0.017	0.750	2112	1077	3156	0.2559	0.5020	3.440
Costa Rica	CRI	1971	0.054	0.093	0.137	0.210	0.506	2974	1435	4084	0.2022	0.4190	2.260
Costa Rica	CRI	1977	0.028	0.080	0.130	0.212	0.550	3646	2144	4536	0.2189	0.3722	2.610
Costa Rica	CRI	1981	0.033	0.084	0.141	0.228	0.514	3419	2309	3993	0.2302	0.3408	2.405
Costa Rica	CRI	1983	0.045	0.093	0.138	0.206	0.518	3081	2112	3539	0.2200	0.3210	2.365
Costa Rica	CRI	1986	0.044	0.105	0.150	0.215	0.486	3273	2331	3664	0.2090	0.2934	2.210
Costa Rica	CRI	1989	0.040	0.091	0.143	0.219	0.507	3451	2063	3960	0.1603	0.2682	2.335
Dominican Rep.	DOM	1984	0.054	0.094	0.140	0.234	0.478	2157	1371	2481	0.1854	0.2917	2.120
Dominican Rep.	DOM	1989	0.042	0.079	0.125	0.197	0.557	2430	1698	2680	0.1783	0.2551	2.575
Ghana	GHA	1988	0.069	0.116	0.161	0.221	0.432	811	668	1027	0.4961	0.6022	1.815
Ghana	GHA	1989	0.070	0.113	0.158	0.218	0.441	821	669	1049	0.4897	0.6007	1.859
Ghana	GHA	1992	0.079	0.120	0.161	0.218	0.422	956	779	1217	0.4856	0.5960	1.715
Guatemala	GTM	1987	0.027	0.063	0.107	0.182	0.621	2104	1035	3301	0.2598	0.5282	2.970
Guatemala	GTM	1989	0.021	0.058	0.105	0.186	0.630	2137	1042	3349	0.2563	0.5255	3.045
Honduras	HND	1968	0.016	0.048	0.095	0.188	0.653	1203	738	2106	0.4049	0.6600	3.185
Honduras	HND	1992	0.038	0.080	0.123	0.195	0.563	1383	751	1756	0.2013	0.3710	2.625
Indonesia	IDN	1976	0.080	0.116	0.160	0.220	0.425	981	476	1773	0.2965	0.6107	1.724
Indonesia	IDN	1978	0.080	0.101	0.148	0.218	0.453	1124	531	1992	0.2810	0.5943	1.866
Indonesia	IDN	1980	0.073	0.123	0.160	0.222	0.423	1282	522	2369	0.2397	0.5886	1.749
Indonesia	IDN	1981	0.077	0.127	0.156	0.218	0.421	1480	590	2742	0.2336	0.5863	1.719
Indonesia	IDN	1984	0.083	0.125	0.153	0.220	0.420	1609	632	2956	0.2275	0.5795	1.686
Indonesia	IDN	1987	0.080	0.129	0.156	0.218	0.417	1703	695	3053	0.2339	0.5727	1.684
Indonesia	IDN	1990	0.092	0.121	0.162	0.206	0.420	1973	677	3664	0.1941	0.5660	1.638
India	IND	1960	0.084	0.123	0.163	0.216	0.414	769	486	1574	0.4677	0.7400	1.650
India	IND	1961	0.081	0.122	0.164	0.218	0.415	763	472	1578	0.4562	0.7370	1.670
India	IND	1962	0.084	0.124	0.163	0.216	0.413	773	461	1634	0.4375	0.7340	1.645
India	IND	1963	0.089	0.129	0.166	0.218	0.398	834	505	1727	0.4430	0.7310	1.545
India	IND	1964	0.088	0.127	0.167	0.218	0.400	863	548	1706	0.4624	0.7280	1.560
India	IND	1965	0.088	0.127	0.166	0.219	0.400	760	457	1559	0.4358	0.7250	1.560
India	IND	1966	0.084	0.129	0.168	0.221	0.398	651	410	1277	0.4547	0.7220	1.570
India	IND	1967	0.086	0.130	0.169	0.220	0.395	698	472	1277	0.4860	0.7190	1.545
India	IND	1968	0.085	0.126	0.165	0.218	0.406	724	463	1381	0.4583	0.7160	1.605
India	IND	1969	0.086	0.127	0.166	0.218	0.403	759	483	1444	0.4539	0.7130	1.585
India	IND	1970	0.088	0.130	0.168	0.219	0.395	801	512	1495	0.4517	0.7063	1.535
India	IND	1972	0.085	0.126	0.165	0.218	0.406	786	484	1504	0.4337	0.7041	1.605

			Share of Income to Each Quintile					Real GDP			Agriculture		
Country	Code	Year	Q1	Q2	Q3	Q4	Q5	per cap	agric.	non-ag	% of GDP	% of LF	Rel Gap
India	IND	1973	0.090	0.131	0.172	0.226	0.381	786	521	1412	0.4663	0.7030	1.455
India	IND	1977	0.085	0.125	0.164	0.217	0.409	859	491	1712	0.3993	0.6986	1.620
India	IND	1983	0.086	0.127	0.165	0.217	0.405	986	524	1966	0.3615	0.6797	1.595
India	IND	1986	0.085	0.125	0.164	0.215	0.411	1092	522	2212	0.3170	0.6628	1.630
India	IND	1987	0.089	0.125	0.163	0.213	0.410	1123	535	2250	0.3133	0.6573	1.605
India	IND	1988	0.090	0.127	0.164	0.214	0.405	1204	597	2340	0.3234	0.6518	1.575
India	IND	1989	0.091	0.129	0.166	0.217	0.397	1235	594	2407	0.3109	0.6464	1.530
India	IND	1990	0.091	0.131	0.169	0.218	0.391	1262	610	2427	0.3097	0.6410	1.500
India	IND	1991	0.090	0.125	0.159	0.207	0.419	1252	615	2365	0.3126	0.6360	1.645
India	IND	1992	0.088	0.125	0.162	0.214	0.411	1284	623	2414	0.3063	0.6310	1.615
Jamaica	JAM	1975	0.041	0.090	0.142	0.224	0.503	2914	668	3976	0.0736	0.3211	2.310
Jamaica	JAM	1988	0.054	0.098	0.145	0.213	0.490	2442	684	3046	0.0716	0.2557	2.181
Jamaica	JAM	1989	0.051	0.095	0.144	0.220	0.490	2530	703	3137	0.0693	0.2494	2.195
Jamaica	JAM	1990	0.060	0.099	0.145	0.213	0.484	2543	676	3143	0.0647	0.2433	2.120
Jamaica	JAM	1991	0.058	0.102	0.149	0.216	0.475	2440	702	2983	0.0684	0.2380	2.082
South Korea	KOR	1965	0.058	0.135	0.155	0.233	0.418	1046	670	1505	0.3525	0.5500	1.801
South Korea	KOR	1966	0.065	0.119	0.170	0.240	0.406	1156	701	1686	0.3263	0.5380	1.705
South Korea	KOR	1968	0.086	0.128	0.169	0.225	0.392	1333	676	2028	0.2605	0.5140	1.530
South Korea	KOR	1969	0.084	0.130	0.173	0.231	0.382	1458	763	2158	0.2628	0.5020	1.490
South Korea	KOR	1970	0.073	0.123	0.163	0.224	0.416	1677	866	2461	0.2537	0.4914	1.716
South Korea	KOR	1971	0.072	0.115	0.158	0.221	0.434	1812	991	2563	0.2613	0.4778	1.810
South Korea	KOR	1976	0.057	0.112	0.154	0.224	0.453	2556	1414	3367	0.2297	0.4152	1.982
South Korea	KOR	1980	0.051	0.110	0.159	0.226	0.454	3093	1211	4204	0.1453	0.3711	2.016
South Korea	KOR	1982	0.070	0.118	0.162	0.220	0.430	3395	1510	4288	0.1430	0.3215	1.802
South Korea	KOR	1985	0.068	0.137	0.160	0.216	0.419	4217	2031	4982	0.1249	0.2592	1.755
South Korea	KOR	1988	0.074	0.123	0.163	0.218	0.422	5606	2737	6364	0.1020	0.2090	1.743
Sri Lanka	LKA	1963	0.045	0.092	0.138	0.202	0.523	1207	699	1864	0.3268	0.5640	2.393
Sri Lanka	LKA	1970	0.069	0.109	0.153	0.220	0.449	1240	635	1987	0.2830	0.5525	1.900
Sri Lanka	LKA	1973	0.072	0.119	0.162	0.216	0.432	1252	630	1988	0.2730	0.5422	1.803
Sri Lanka	LKA	1979	0.057	0.103	0.143	0.198	0.499	1548	799	2366	0.2694	0.5221	2.207
Sri Lanka	LKA	1980	0.079	0.175	0.175	0.204	0.368	1635	864	2475	0.2755	0.5215	1.448
Sri Lanka	LKA	1981	0.057	0.096	0.134	0.194	0.519	1632	872	2450	0.2770	0.5184	2.309
Sri Lanka	LKA	1987	0.051	0.091	0.134	0.201	0.524	2040	1099	2982	0.2696	0.5004	2.367
Sri Lanka	LKA	1990	0.089	0.131	0.169	0.217	0.393	2096	1122	3038	0.2632	0.4916	1.521
Morocco	MAR	1984	0.066	0.111	0.153	0.209	0.462	1908	559	3321	0.1500	0.5117	1.979
Morocco	MAR	1991	0.066	0.105	0.150	0.217	0.463	2244	1032	3185	0.2010	0.4370	1.987
Mexico	MEX	1963	0.036	0.056	0.093	0.174	0.641	3013	929	5243	0.1595	0.5170	3.025
Mexico	MEX	1968	0.028	0.051	0.105	0.179	0.637	3760	1004	6126	0.1234	0.4620	3.045
Mexico	MEX	1975	0.026	0.054	0.097	0.162	0.661	4928	1330	7316	0.1076	0.3989	3.175
Mexico	MEX	1977	0.029	0.074	0.132	0.220	0.545	4902	1299	7150	0.1018	0.3842	2.580
Mexico	MEX	1984	0.041	0.078	0.123	0.199	0.559	5524	1443	7534	0.0862	0.3299	2.590
Mexico	MEX	1989	0.032	0.070	0.115	0.190	0.593	5566	1470	7239	0.0766	0.2900	2.805

			Share of Income to Each Quintile					Real GDP			Agriculture		
Country	Code	Year	Q1	Q2	Q3	Q4	Q5	per cap	agric.	non-ag	% of GDP	% of LF	Rel Gap
Malaysia	MYS	1970	0.040	0.077	0.123	0.198	0.562	2154	1143	3328	0.2852	0.5374	2.610
Malaysia	MYS	1976	0.033	0.078	0.118	0.198	0.573	2854	1678	3838	0.2678	0.4555	2.700
Malaysia	MYS	1979	0.037	0.082	0.125	0.198	0.558	3477	1963	4571	0.2367	0.4193	2.605
Malaysia	MYS	1984	0.042	0.086	0.132	0.208	0.532	4423	2463	5468	0.1936	0.3477	2.450
Malaysia	MYS	1989	0.046	0.083	0.130	0.204	0.537	4671	3159	5272	0.1925	0.2846	2.458
Taiwan	OAN	1964	0.079	0.125	0.162	0.220	0.415	1535	832	2273	0.2774	0.5120	1.678
Taiwan	OAN	1966	0.078	0.122	0.163	0.223	0.414	1726	909	2504	0.2571	0.4880	1.677
Taiwan	OAN	1968	0.088	0.134	0.171	0.225	0.382	1944	993	2767	0.2371	0.4640	1.468
Taiwan	OAN	1970	0.086	0.133	0.171	0.225	0.386	2185	962	3146	0.1936	0.4400	1.501
Taiwan	OAN	1972	0.088	0.135	0.170	0.221	0.386	2621	999	3739	0.1555	0.4080	1.490
Taiwan	OAN	1974	0.089	0.136	0.175	0.227	0.373	3004	1272	4048	0.1592	0.3760	1.418
Taiwan	OAN	1976	0.090	0.135	0.173	0.226	0.377	3345	1437	4346	0.1477	0.3440	1.436
Taiwan	OAN	1977	0.089	0.137	0.175	0.227	0.372	3570	1516	4572	0.1393	0.3280	1.414
Taiwan	OAN	1978	0.086	0.137	0.175	0.227	0.375	3920	1600	4972	0.1274	0.3120	1.444
Taiwan	OAN	1979	0.088	0.139	0.177	0.228	0.368	4249	1697	5322	0.1182	0.2960	1.399
Taiwan	OAN	1980	0.088	0.138	0.176	0.228	0.370	4458	1709	5527	0.1073	0.2800	1.412
Taiwan	OAN	1981	0.087	0.138	0.176	0.227	0.373	4593	1705	5683	0.1017	0.2740	1.429
Pakistan	PAK	1969	0.092	0.129	0.165	0.214	0.401	947	595	1458	0.3720	0.5920	1.546
Pakistan	PAK	1970	0.092	0.131	0.168	0.215	0.394	1029	644	1579	0.3683	0.5884	1.512
Pakistan	PAK	1971	0.089	0.127	0.164	0.212	0.408	972	586	1526	0.3553	0.5894	1.591
Pakistan	PAK	1979	0.086	0.125	0.163	0.214	0.413	1055	537	1823	0.3041	0.5974	1.635
Pakistan	PAK	1985	0.085	0.123	0.162	0.215	0.414	1262	611	2197	0.2853	0.5895	1.642
Pakistan	PAK	1986	0.082	0.125	0.166	0.221	0.407	1280	605	2227	0.2762	0.5839	1.625
Pakistan	PAK	1987	0.085	0.125	0.164	0.217	0.410	1309	594	2290	0.2625	0.5784	1.625
Pakistan	PAK	1988	0.086	0.128	0.166	0.216	0.404	1371	623	2375	0.2602	0.5730	1.589
Pakistan	PAK	1991	0.084	0.129	0.169	0.222	0.397	1394	642	2339	0.2566	0.5570	1.565
Philippines	PHL	1961	0.042	0.079	0.121	0.193	0.565	1153	463	2348	0.2545	0.6340	2.615
Philippines	PHL	1965	0.035	0.125	0.080	0.200	0.560	1243	532	2355	0.2611	0.6100	2.625
Philippines	PHL	1971	0.036	0.081	0.133	0.210	0.540	1432	757	2338	0.3031	0.5731	2.520
Philippines	PHL	1985	0.052	0.091	0.133	0.203	0.521	1542	779	2264	0.2458	0.4864	2.345
Philippines	PHL	1988	0.052	0.091	0.133	0.199	0.525	1674	826	2413	0.2296	0.4656	2.365
Thailand	THA	1962	0.080	0.086	0.121	0.215	0.498	992	370	4071	0.3106	0.8320	2.089
Thailand	THA	1969	0.051	0.101	0.143	0.204	0.501	1406	513	5069	0.2934	0.8040	2.247
Thailand	THA	1975	0.049	0.101	0.148	0.218	0.484	1686	602	4977	0.2687	0.7523	2.174
Thailand	THA	1981	0.043	0.094	0.139	0.213	0.511	2217	675	5843	0.2136	0.7016	2.340
Thailand	THA	1986	0.042	0.087	0.131	0.209	0.531	2510	591	6329	0.1566	0.6655	2.445
Thailand	THA	1988	0.041	0.085	0.128	0.204	0.542	2971	738	7148	0.1618	0.6516	2.505
Thailand	THA	1990	0.040	0.083	0.125	0.200	0.552	3570	713	8606	0.1274	0.6380	2.560
Thailand	THA	1992	0.037	0.076	0.116	0.186	0.585	3924	773	9176	0.1231	0.6250	2.740
Tunisia	TUN	1965	0.057	0.100	0.148	0.205	0.490	1232	434	2380	0.2080	0.5900	2.165
Tunisia	TUN	1990	0.059	0.104	0.153	0.221	0.463	2909	1645	3395	0.1572	0.2779	2.024
Turkey	TUR	1968	0.030	0.070	0.100	0.200	0.600	2106	1154	4629	0.3977	0.7260	2.850

			Share of Income to Each Quintile					Real GDP			Agriculture		
Country	Code	Year	Q1	Q2	Q3	Q4	Q5	per cap	agric.	non-ag	% of GDP	% of LF	Rel Gap
Turkey	TUR	1973	0.035	0.080	0.125	0.195	0.565	2472	1260	4979	0.3435	0.6741	2.650
Turkey	TUR	1987	0.052	0.096	0.141	0.212	0.499	3441	1144	6266	0.1834	0.5515	2.235
Uganda	UGA	1989	0.085	0.121	0.160	0.215	0.419	548	336	3173	0.5679	0.9254	1.671
Uganda	UGA	1992	0.068	0.103	0.144	0.204	0.481	547	303	3468	0.5118	0.9230	2.068
Venezuela	VEN	1971	0.036	0.094	0.142	0.208	0.520	7576	1786	9461	0.0579	0.2456	2.420
Venezuela	VEN	1976	0.048	0.092	0.145	0.238	0.477	7777	1960	9087	0.0463	0.1838	2.145
Venezuela	VEN	1977	0.048	0.098	0.148	0.230	0.475	8140	2317	9362	0.0494	0.1734	2.133
Venezuela	VEN	1978	0.051	0.097	0.180	0.220	0.452	8233	2473	9360	0.0492	0.1636	2.003
Venezuela	VEN	1979	0.050	0.114	0.154	0.254	0.428	8076	2524	9090	0.0483	0.1544	1.886
Venezuela	VEN	1981	0.050	0.097	0.147	0.224	0.482	7197	2433	8005	0.0490	0.1450	2.160
Venezuela	VEN	1987	0.047	0.092	0.140	0.215	0.506	6483	3079	6986	0.0611	0.1287	2.294
Venezuela	VEN	1989	0.048	0.095	0.144	0.219	0.494	5919	2915	6343	0.0609	0.1237	2.230
Venezuela	VEN	1990	0.036	0.071	0.117	0.193	0.584	6070	2701	6535	0.0540	0.1213	2.740
Summary Statistics for Whole Sample													
Mean		1979	0.061	0.104	0.146	0.212	0.477	2393	1021	3636	0.2487	0.5125	2.079
Median		1980	0.065	0.109	0.152	0.216	0.453	1726	752	3137	0.2509	0.5282	1.960
SD		9.041	0.022	0.026	0.024	0.025	0.086	1656	616	1895	0.1274	0.1859	0.532
Min		1960	0.016	0.048	0.080	0.017	0.341	547	303	1027	0.0463	0.1213	1.199
Max		1992	0.101	0.175	0.191	0.313	0.750	8233	3159	9461	0.5679	0.9254	3.440
Summary Statistics for wgt2=1													
Mean		1979	0.042	0.081	0.126	0.199	0.552	3237	1298	4629	0.1793	0.4201	2.560
Median		1981	0.041	0.083	0.130	0.200	0.544	2971	1199	4204	0.1675	0.3989	2.549
SD		8.885	0.012	0.017	0.019	0.026	0.062	1678	658	1942	0.0942	0.1745	0.351
Min		1960	0.016	0.048	0.080	0.017	0.452	547	303	1756	0.0463	0.1213	2.003
Max		1992	0.080	0.125	0.180	0.238	0.750	8233	3159	9461	0.5118	0.9230	3.440
Summary Statistics for wgt2=0													
Mean		1979	0.080	0.124	0.164	0.224	0.408	1611	764	2716	0.3129	0.5980	1.639
Median		1980	0.084	0.125	0.163	0.220	0.409	1262	613	2401	0.2909	0.6055	1.625
SD		9.22	0.010	0.010	0.008	0.017	0.026	1190	442	1299	0.1207	0.1528	0.162
Min		1960	0.050	0.101	0.148	0.196	0.341	548	336	1027	0.0483	0.1544	1.199
Max		1992	0.101	0.175	0.191	0.313	0.463	8076	2737	9090	0.5679	0.9254	1.987

Appendix B

Time-Series Relationships Between Various Measures of Average Income and Income Distribution, by Country

RGDP pc = Real GDP per capita, in 1993 $PPP

RGDP pc Q1 = Real GDP per capita in 1993 $PPP of Quintile 1

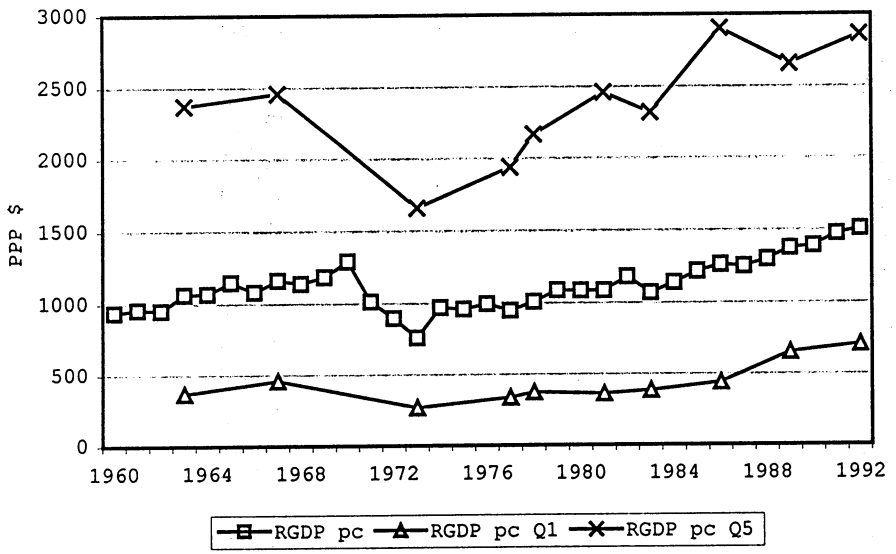
RGDP pc Q5 = Real GDP per capita in 1993 $PPP of Quintile 5

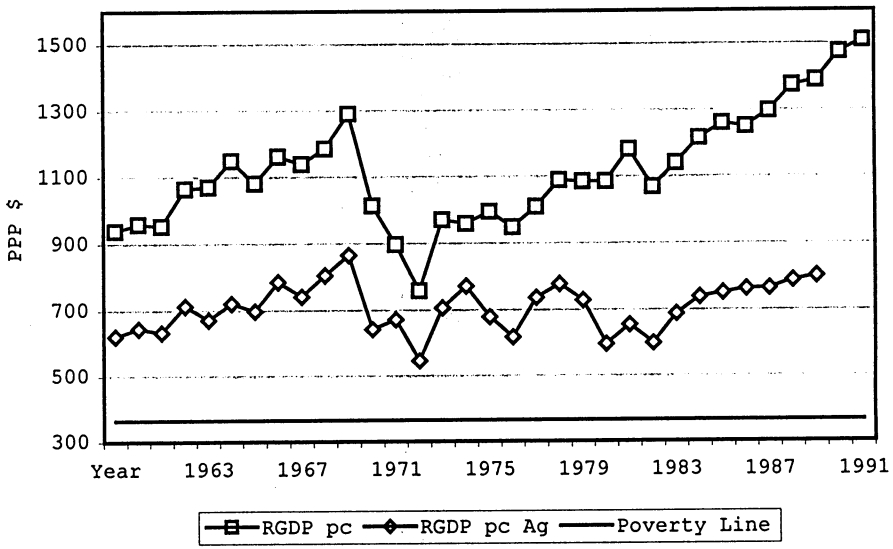
RGDP pc Ag = Real GDP per capita in 1993 $PPP of Agricultural Sector

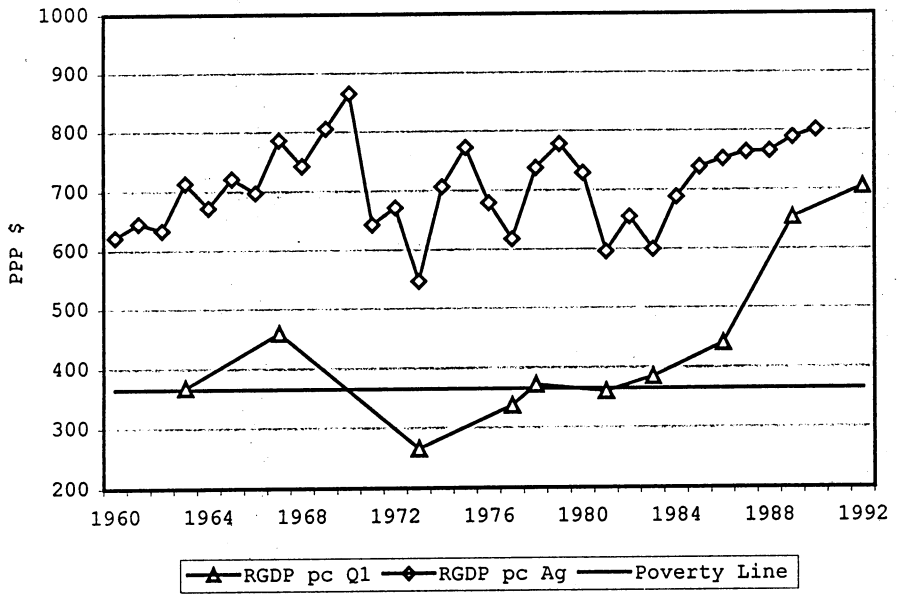
Poverty Line = $PPP 365 (one dollar per day)

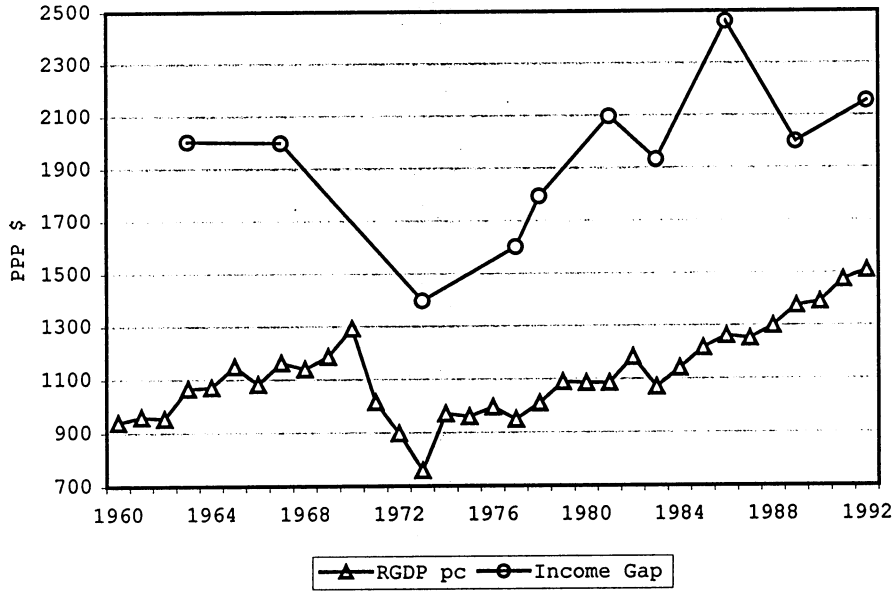
Income Gap = (RGDP pc Q5) minus (RGDP pc Q1)

Bangladesh

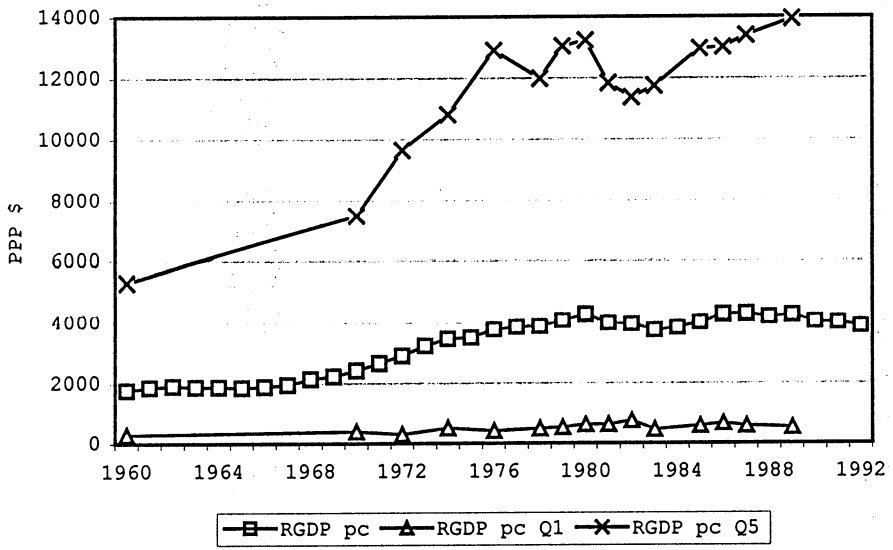

PPP $
3000
2500
2000
1500
1000
500
0
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

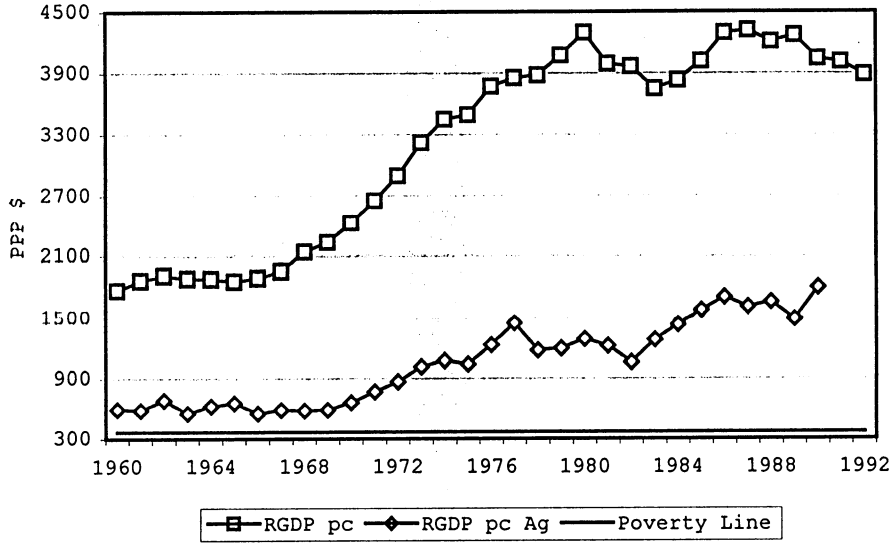

PPP $
1500
1300
1100
900
700
500
300
Year
1963
1967
1971
1975
1979
1983
1987
1991
RGDP pc
RGDP pc Ag
Poverty Line

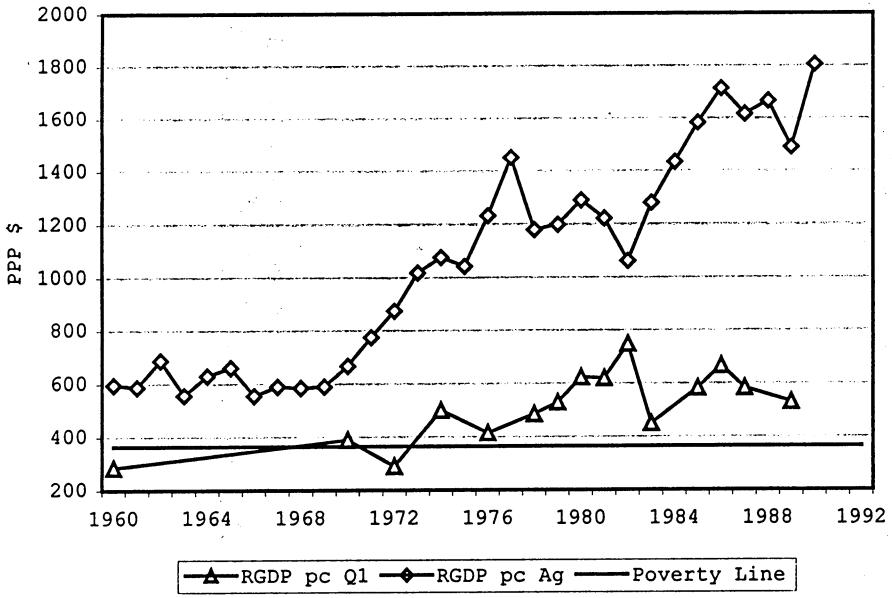

PPP $
1000
900
800
700
600
500
400
300
200
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

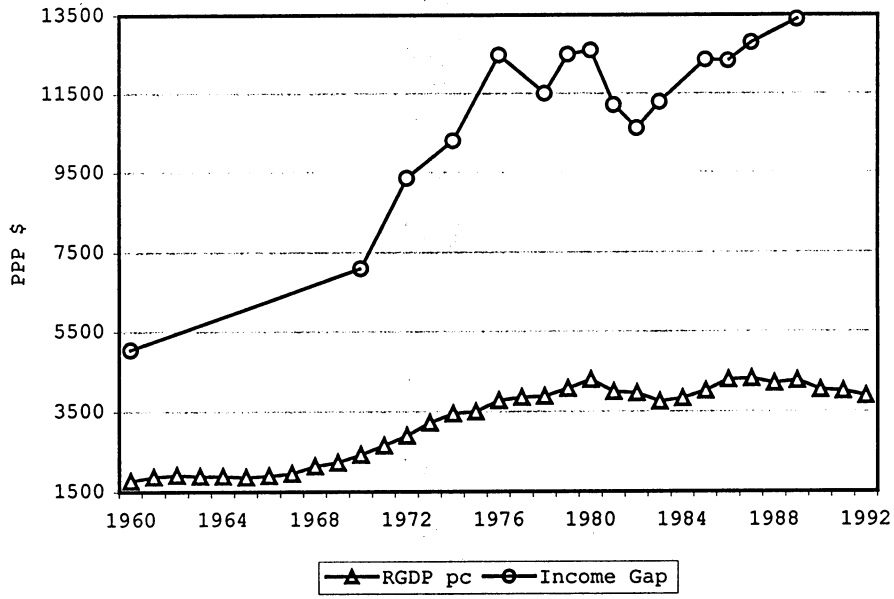

PPP $
2500
2300
2100
1900
1700
1500
1300
1100
900
700
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

Brazil

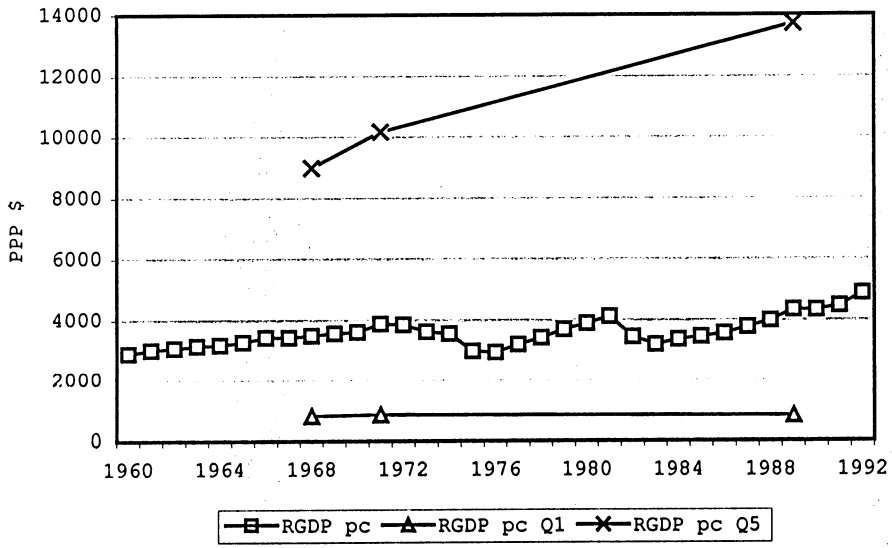

14000
12000
10000
8000
6000
4000
2000
0
PPP $
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

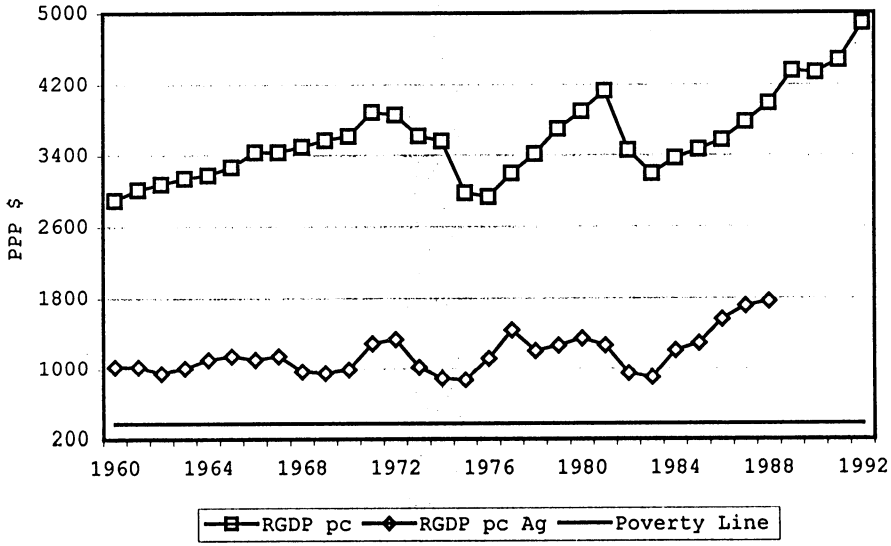

4500
3900
3300
2700
2100
1500
900
300
PPP $
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

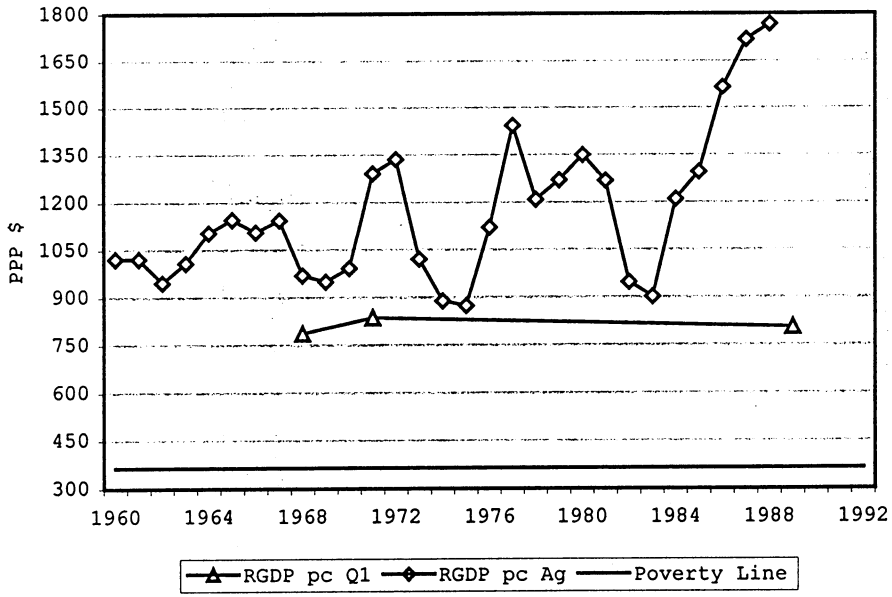

2000
1800
1600
1400
1200
1000
800
600
400
200
PPP $
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

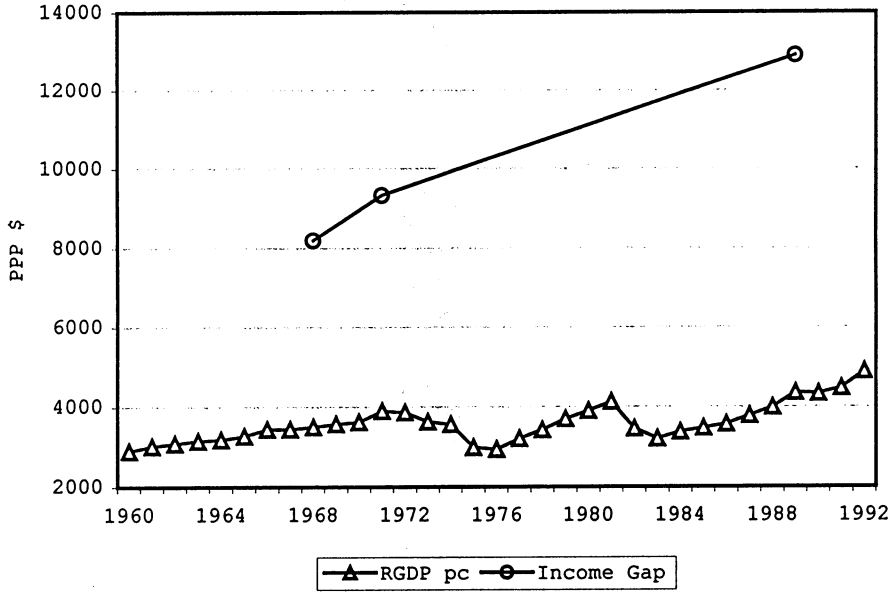

13500
11500
9500
7500
5500
3500
1500
PPP $
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

Chile

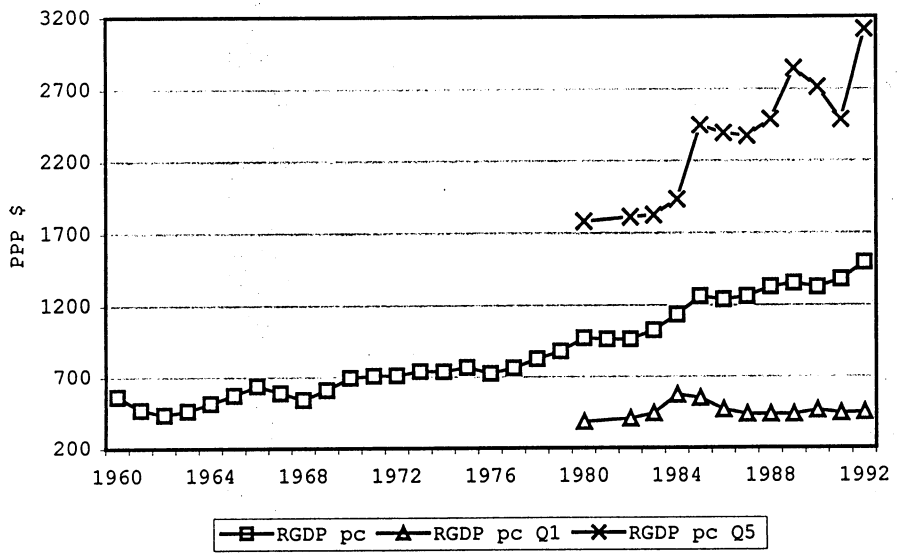

PPP $
14000
12000
10000
8000
6000
4000
2000
0
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

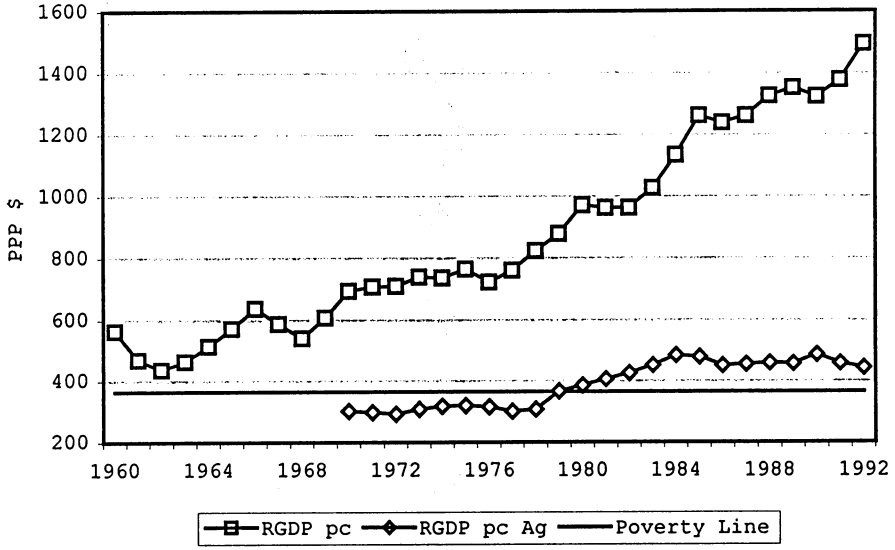

PPP $
5000
4200
3400
2600
1800
1000
200
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

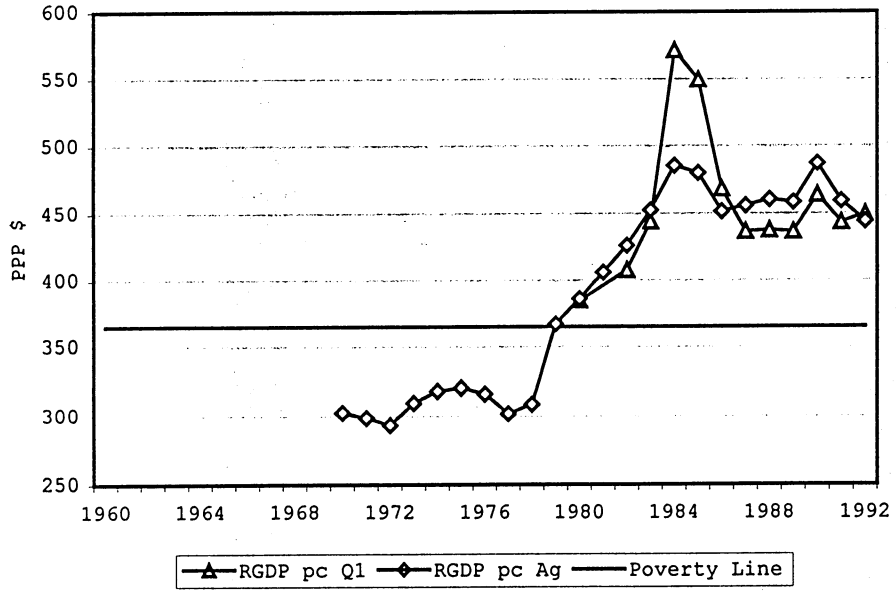

PPP $
1800
1650
1500
1350
1200
1050
900
750
600
450
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

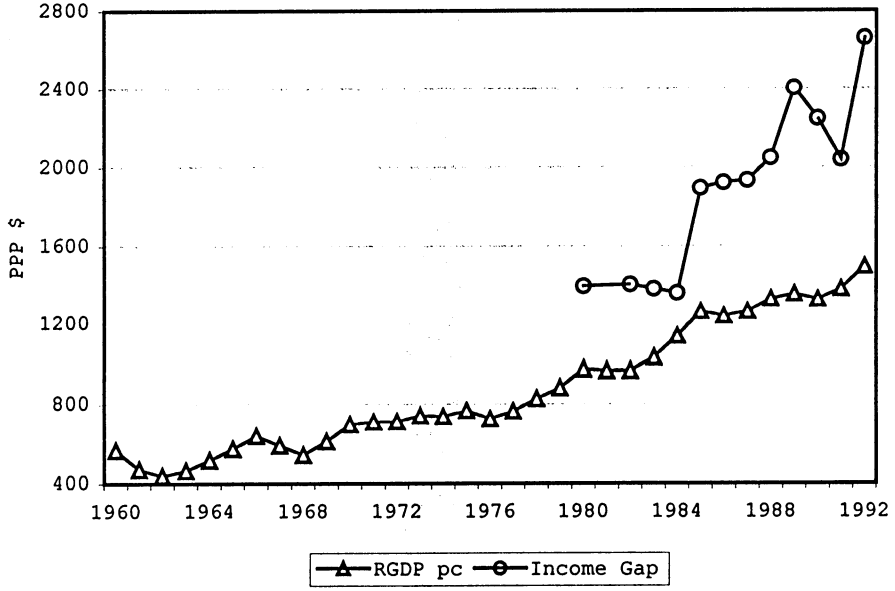

PPP $
14000
12000
10000
8000
6000
4000
2000
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

China

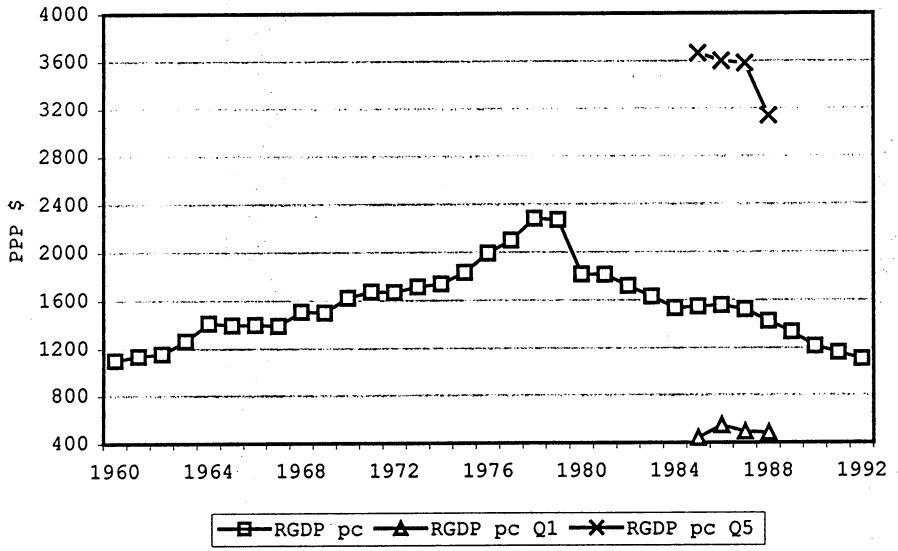

PPP $
3200
2700
2200
1700
1200
700
200
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

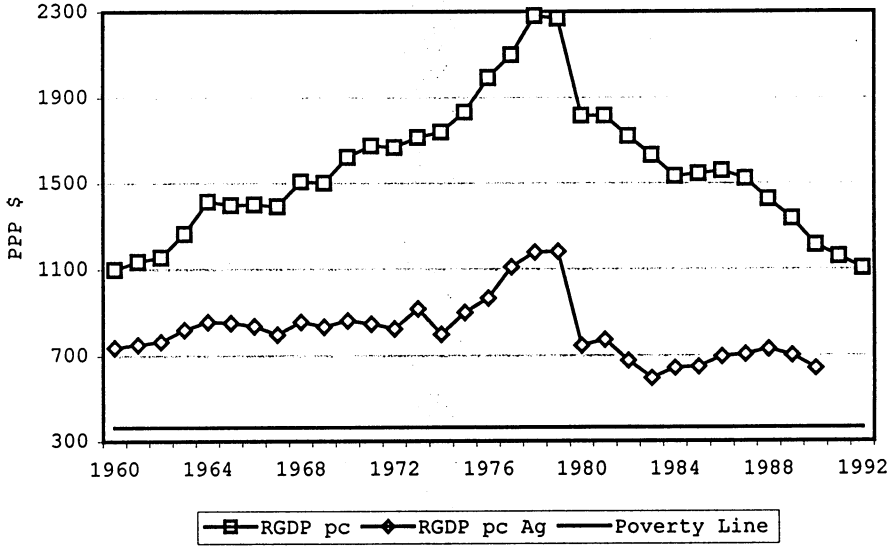

PPP $
1600
1400
1200
1000
800
600
400
200
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

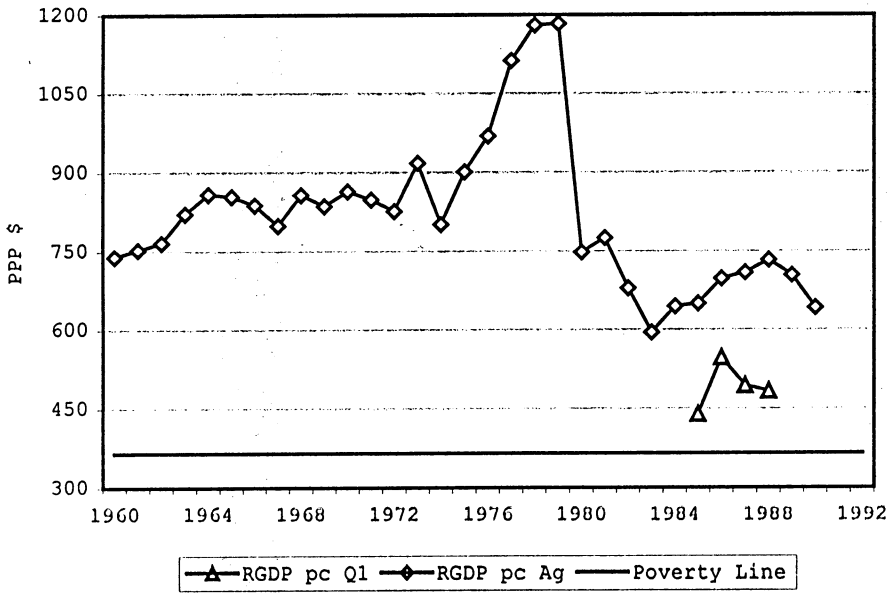

PPP $
600
550
500
450
400
350
300
250
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

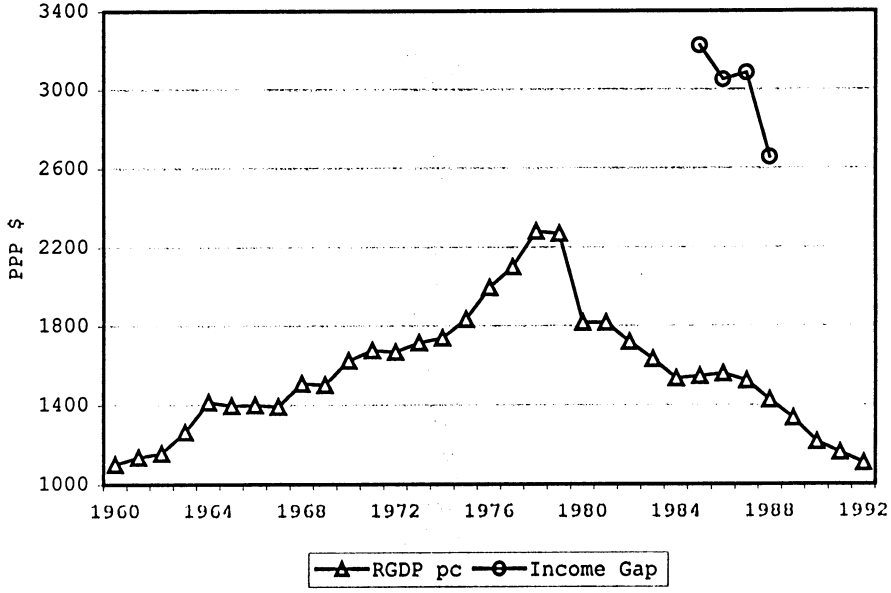

PPP $
2800
2400
2000
1600
1200
800
400
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

Ivory Coast

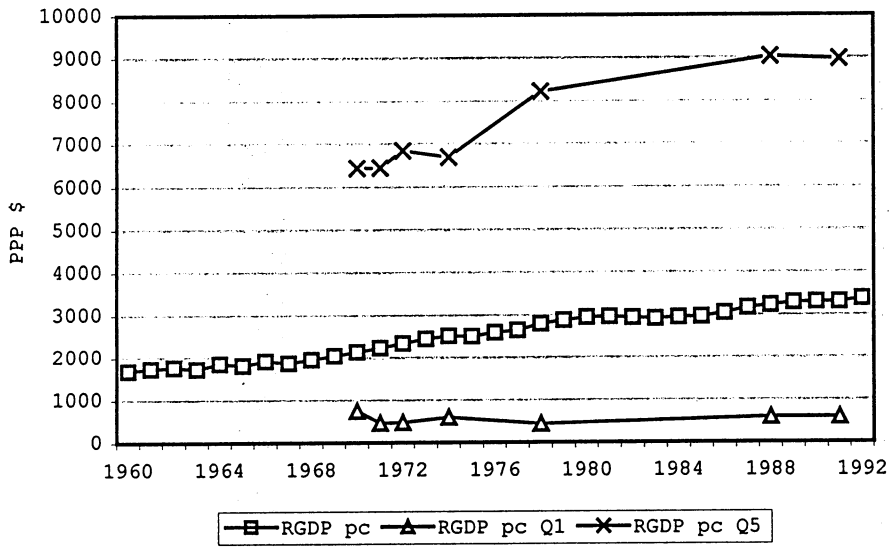

PPP $
4000
3600
3200
2800
2400
2000
1600
1200
800
400
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

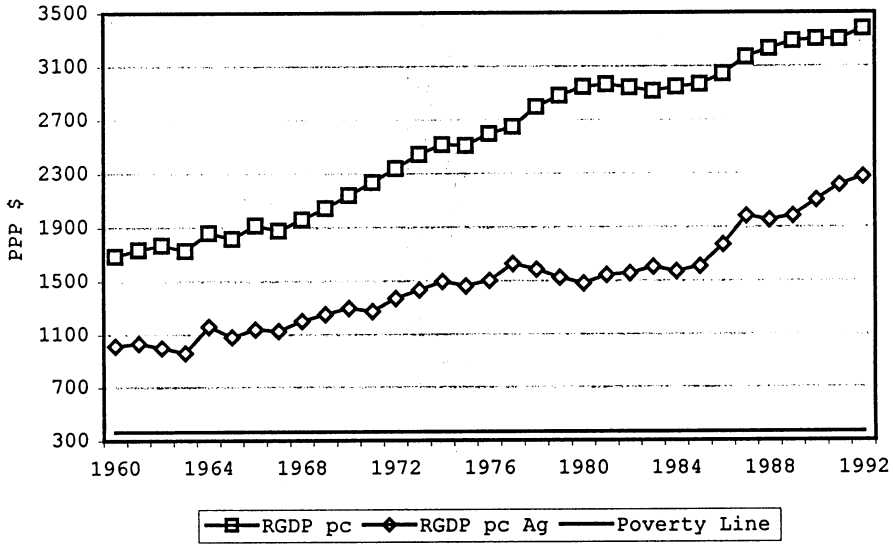

PPP $
2300
1900
1500
1100
700
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

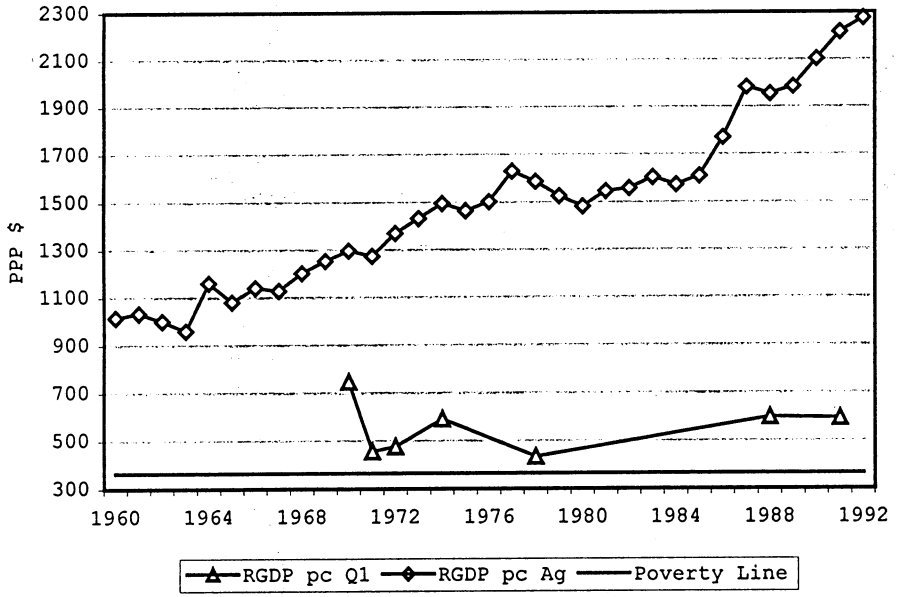

PPP $
1200
1050
900
750
600
450
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

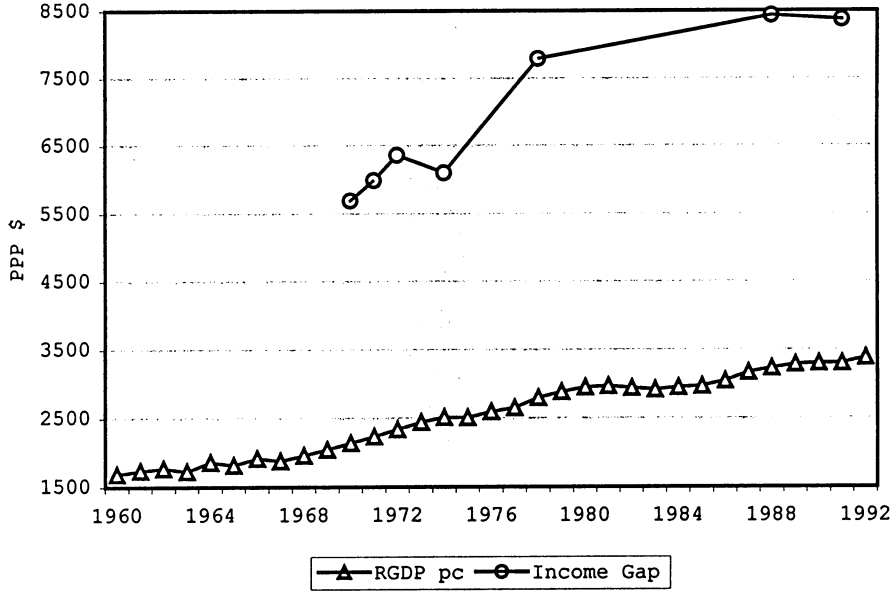

PPP $
3400
3000
2600
2200
1800
1400
1000
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

Columbia

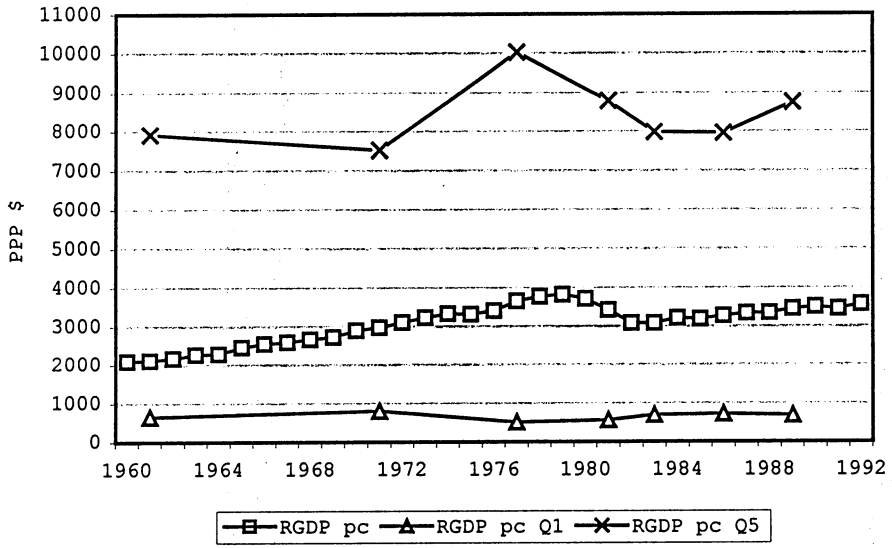

PPP $
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

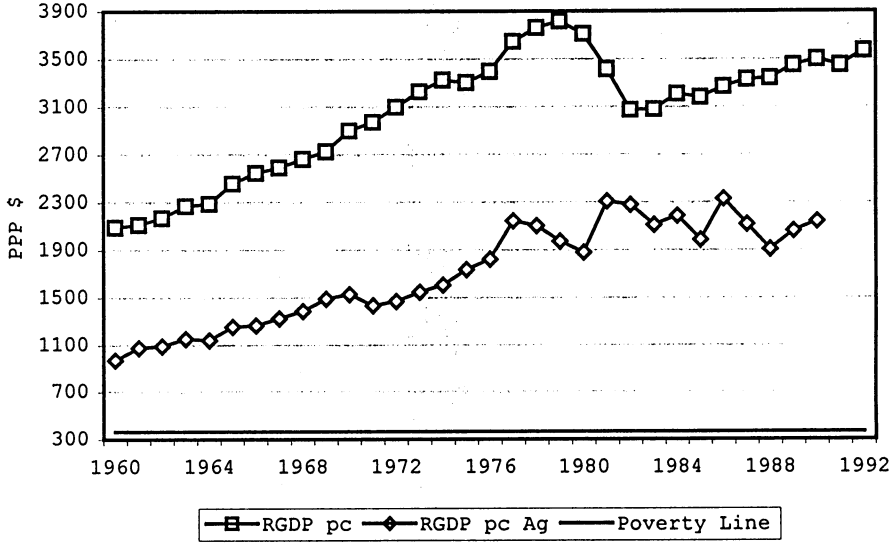

PPP $
3500
3100
2700
2300
1900
1500
1100
700
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

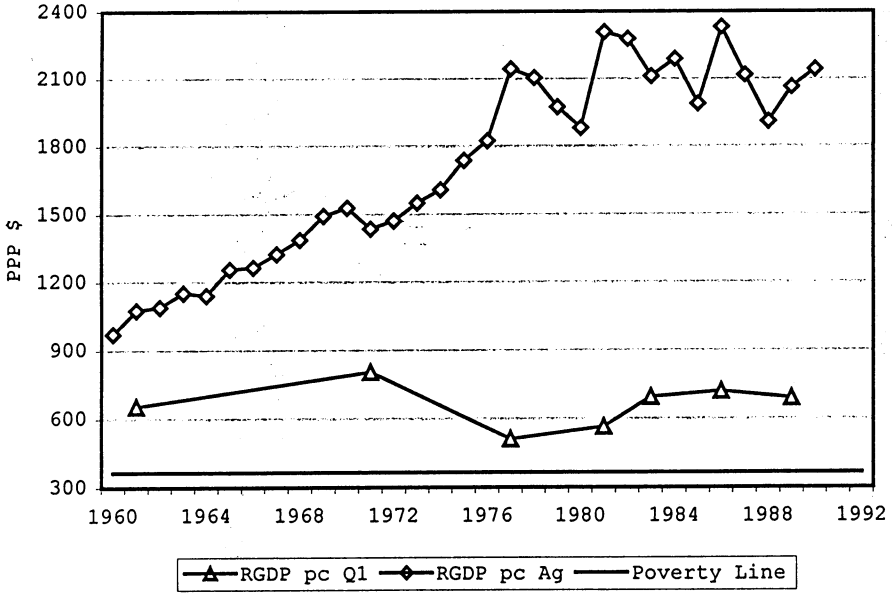

PPP $
2300
2100
1900
1700
1500
1300
1100
900
700
500
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

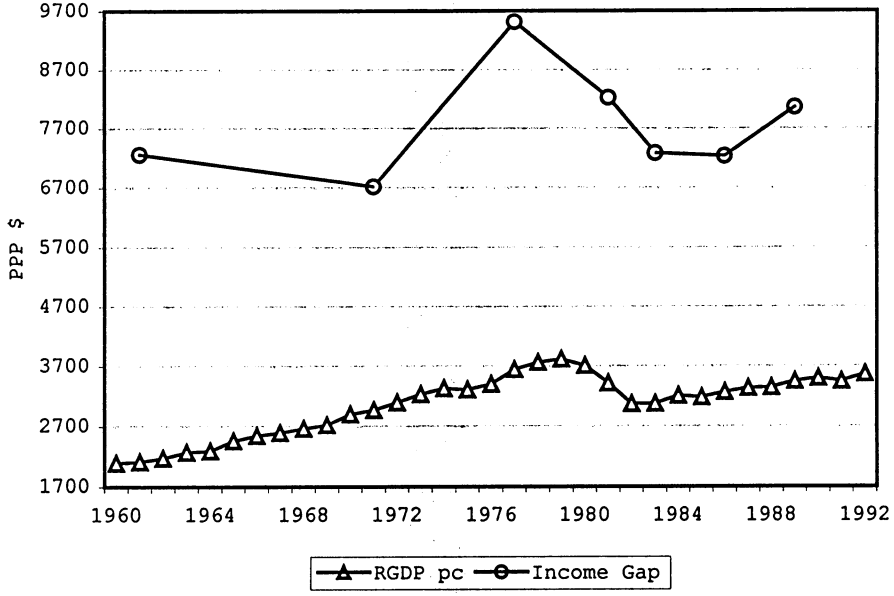

PPP $
8500
7500
6500
5500
4500
3500
2500
1500
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

Costa Rica

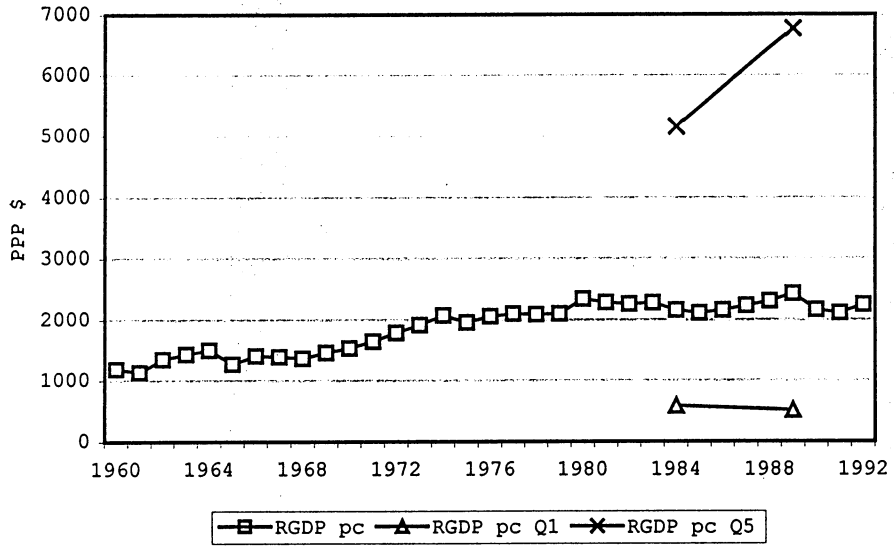

PPP $
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

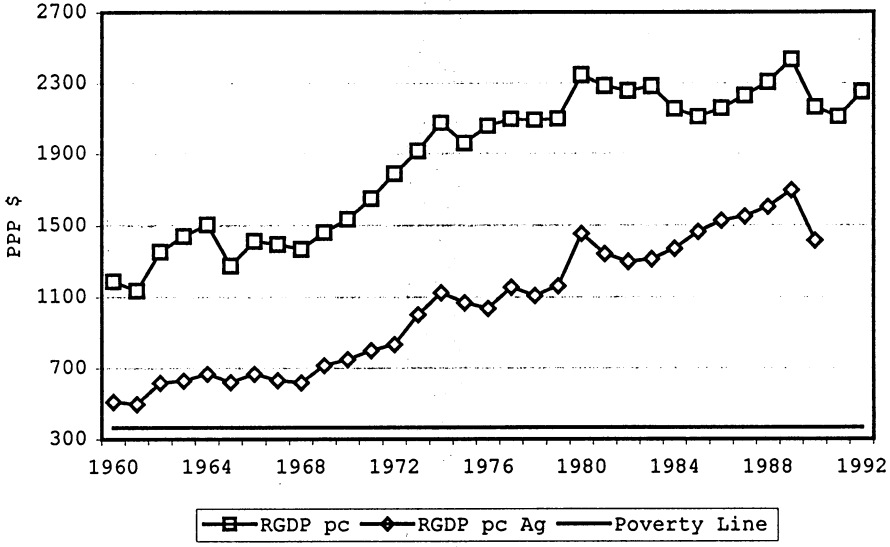

PPP $
3900
3500
3100
2700
2300
1900
1500
1100
700
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

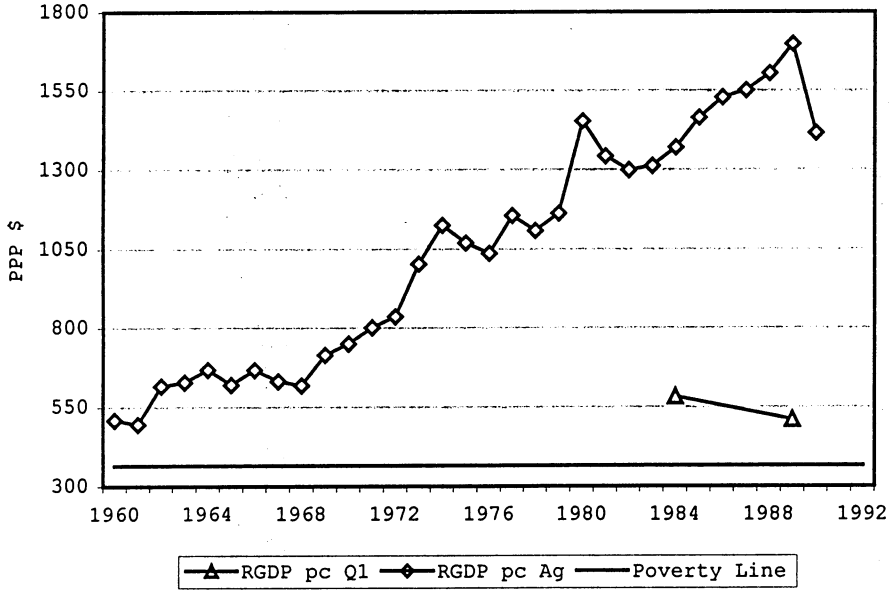

PPP $
2400
2100
1800
1500
1200
900
600
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

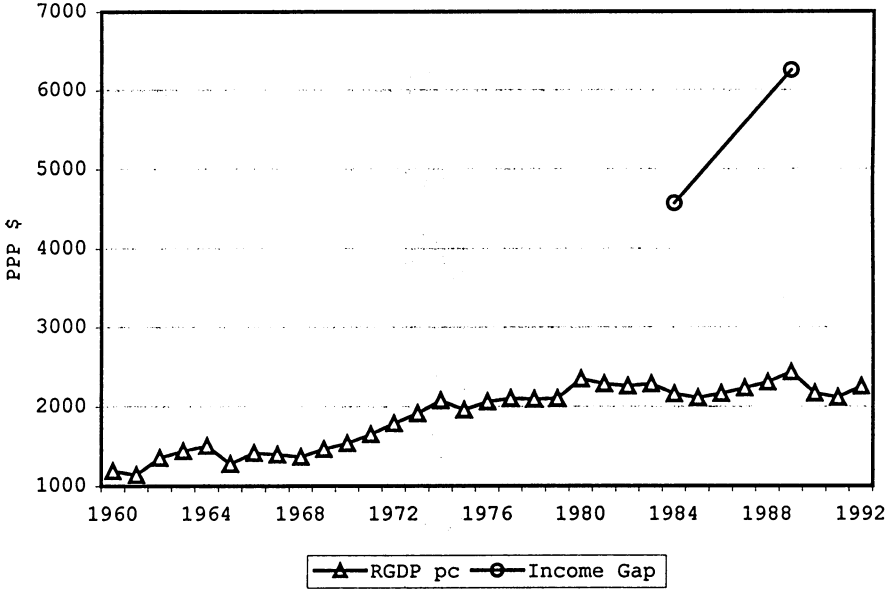

PPP $
9700
8700
7700
6700
5700
4700
3700
2700
1700
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

Dominican Republic

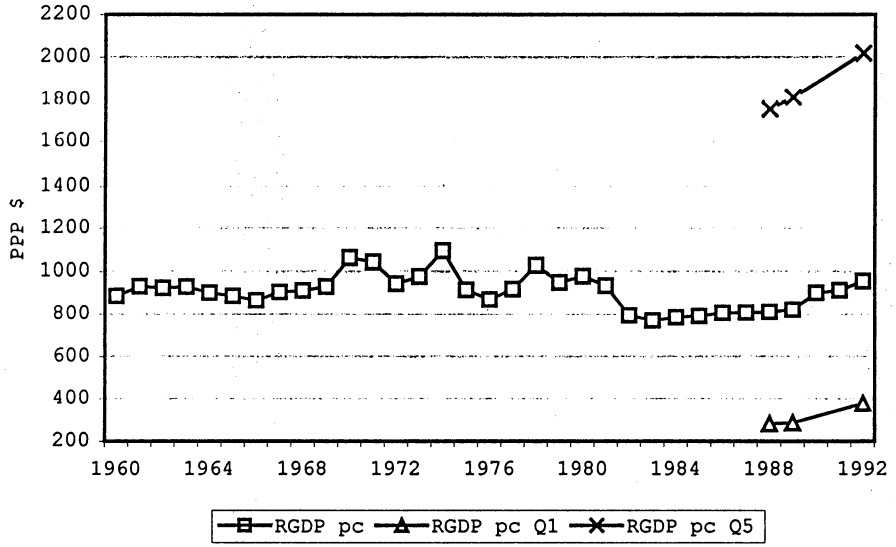


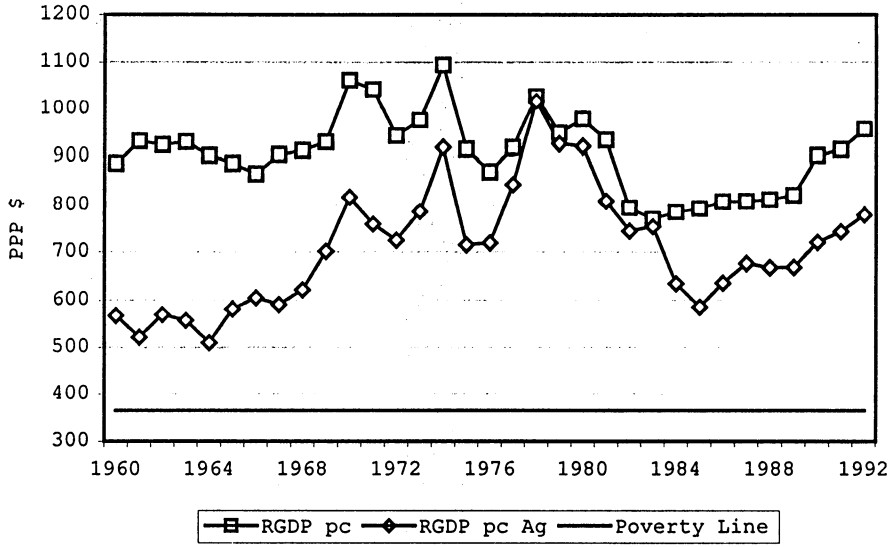


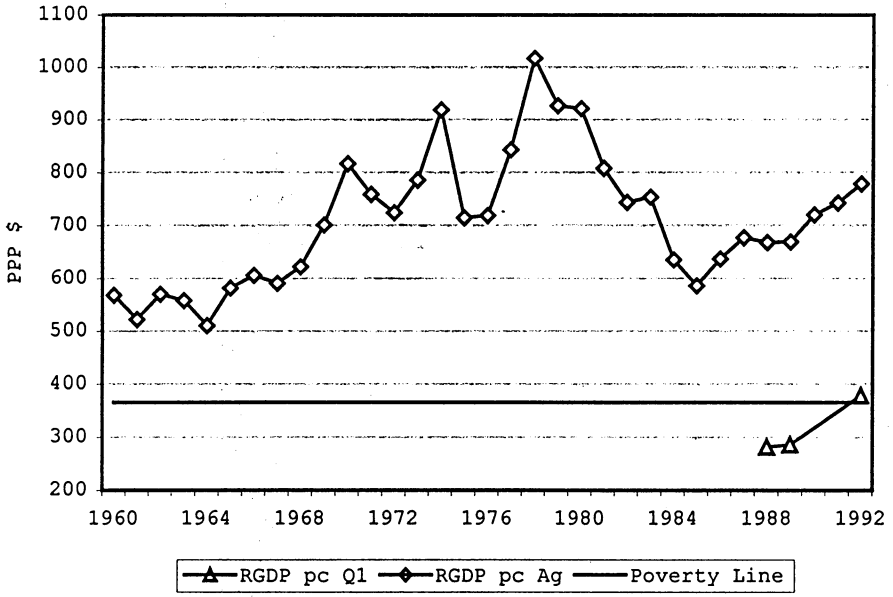


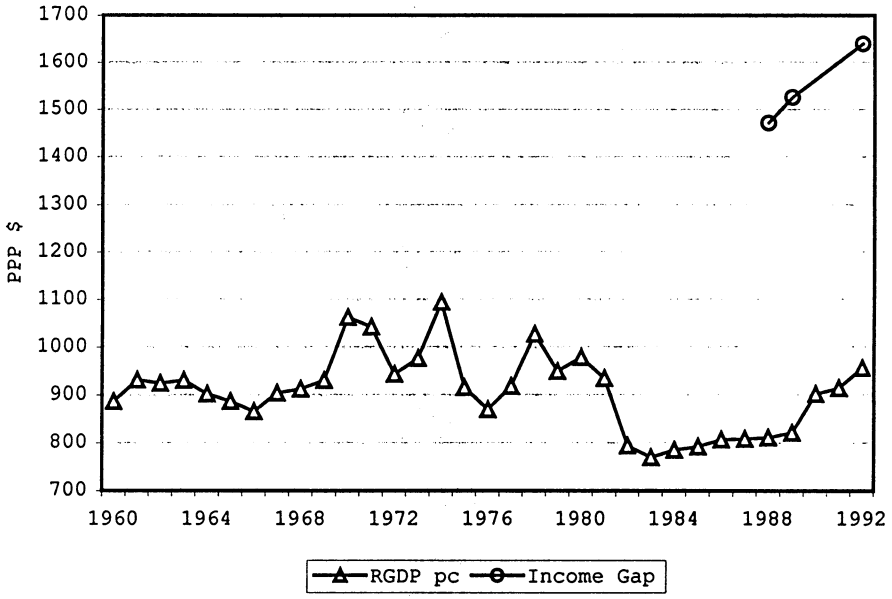


Ghana

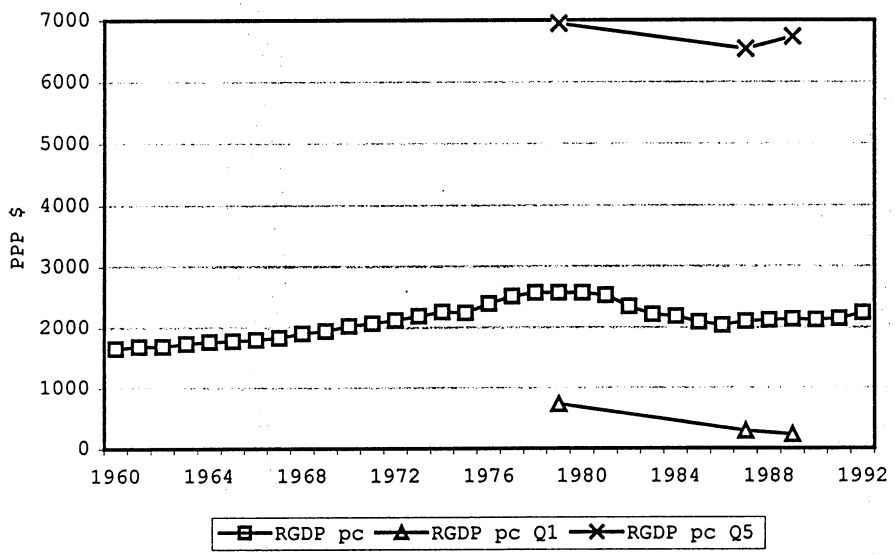

PPP $
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

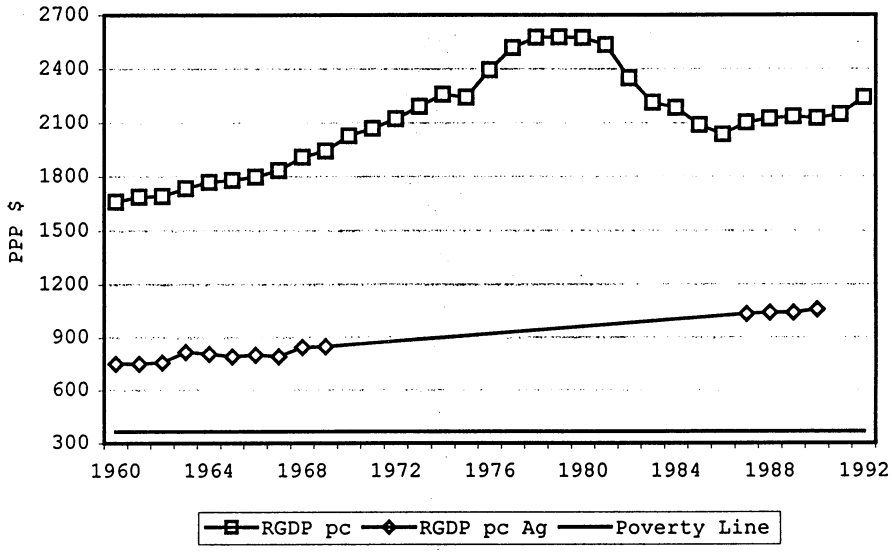

PPP $
1200
1100
1000
900
800
700
600
500
400
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

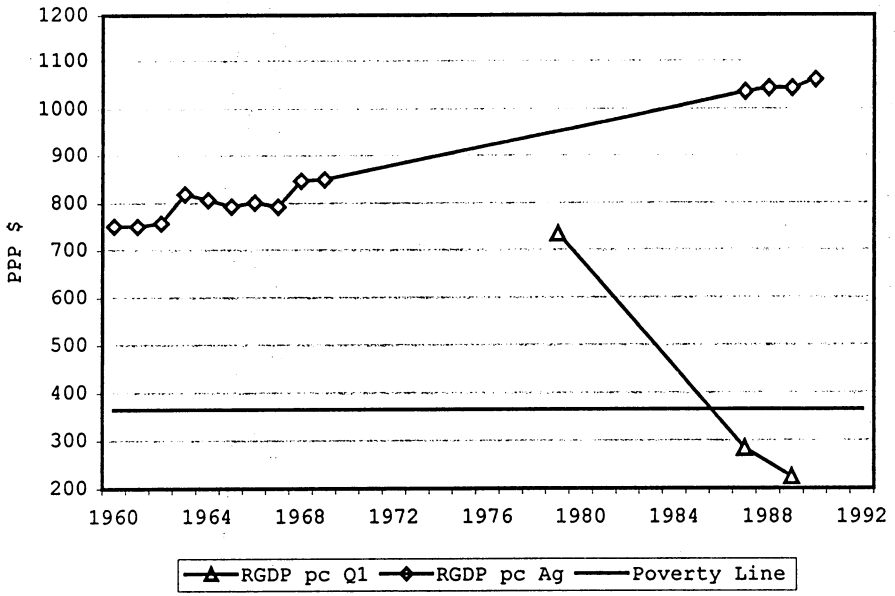

PPP $
1100
1000
900
800
700
600
500
400
300
200
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

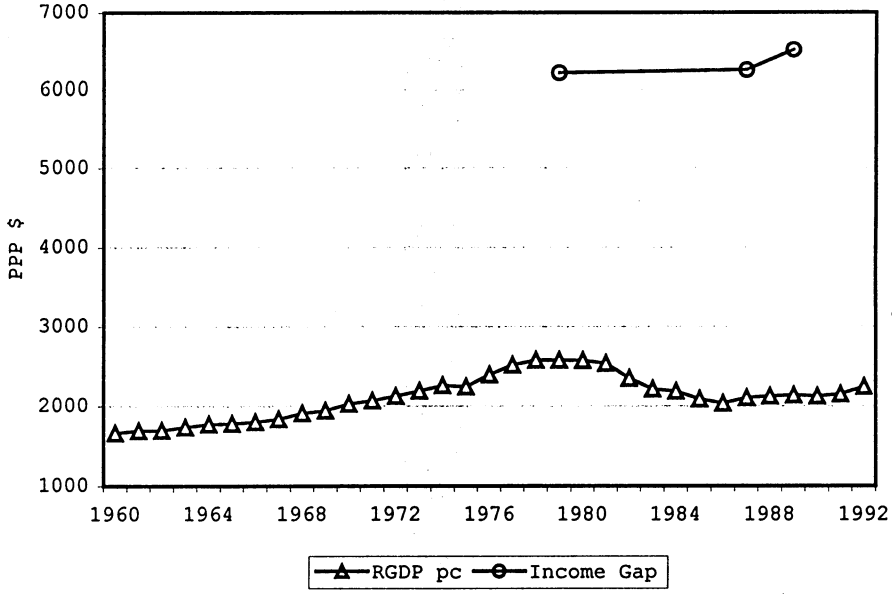

PPP $
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

Guatemala

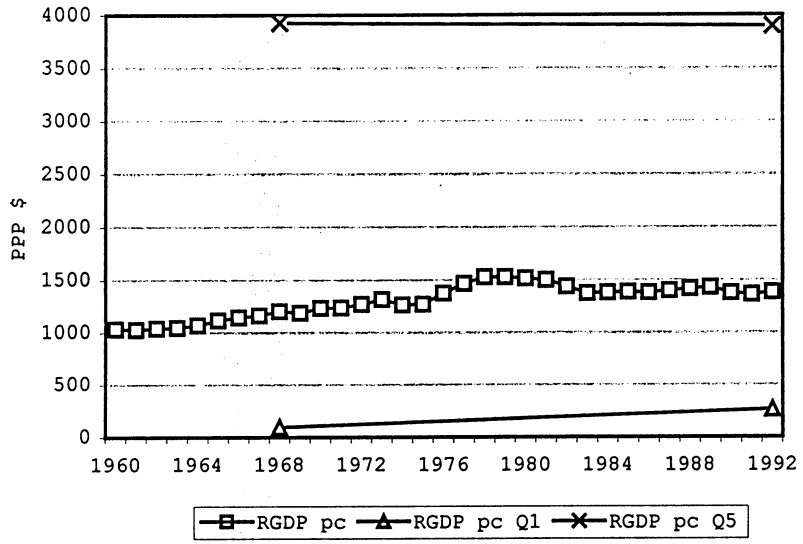

PPP $
7000
6000
5000
4000
3000
2000
1000
0
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

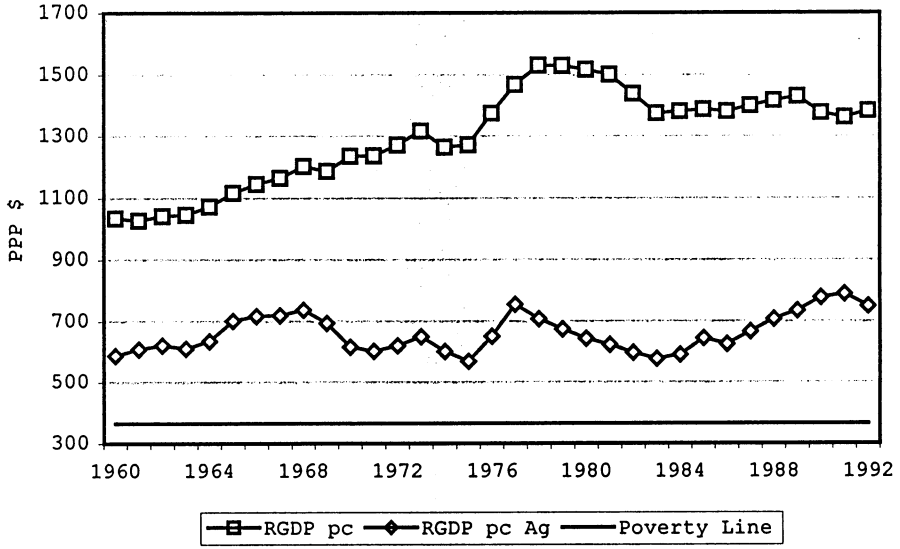

PPP $
2700
2400
2100
1800
1500
1200
900
600
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

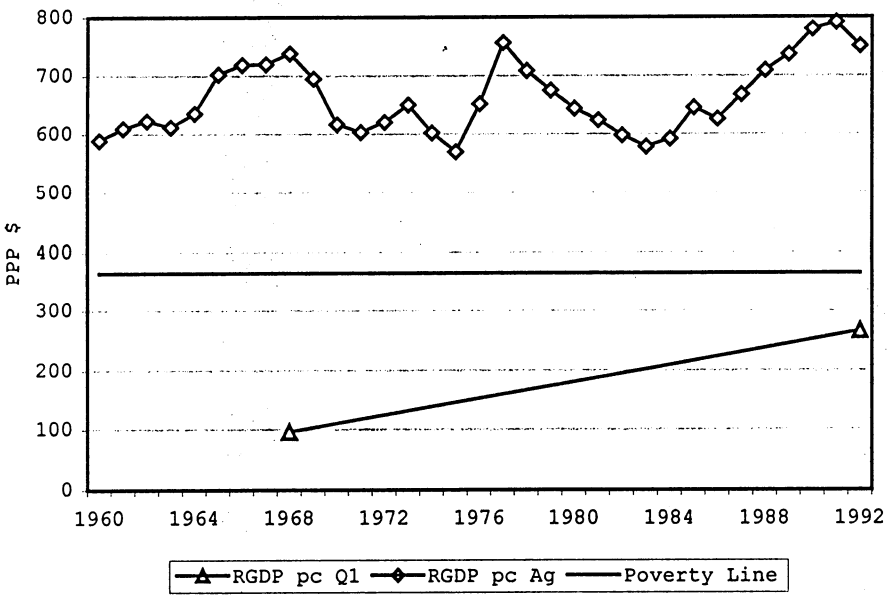

PPP $
1200
1100
1000
900
800
700
600
500
400
300
200
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

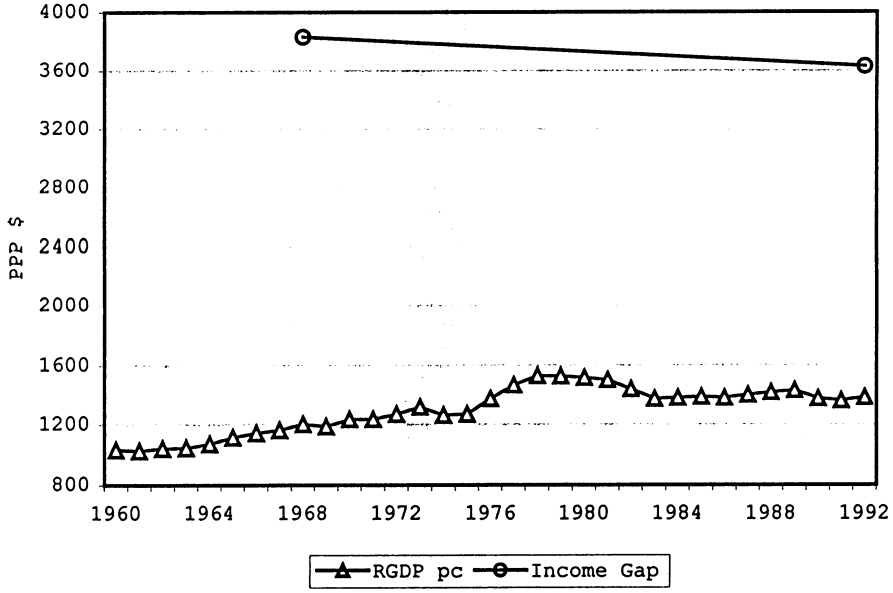

PPP $
7000
6000
5000
4000
3000
2000
1000
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

Honduras

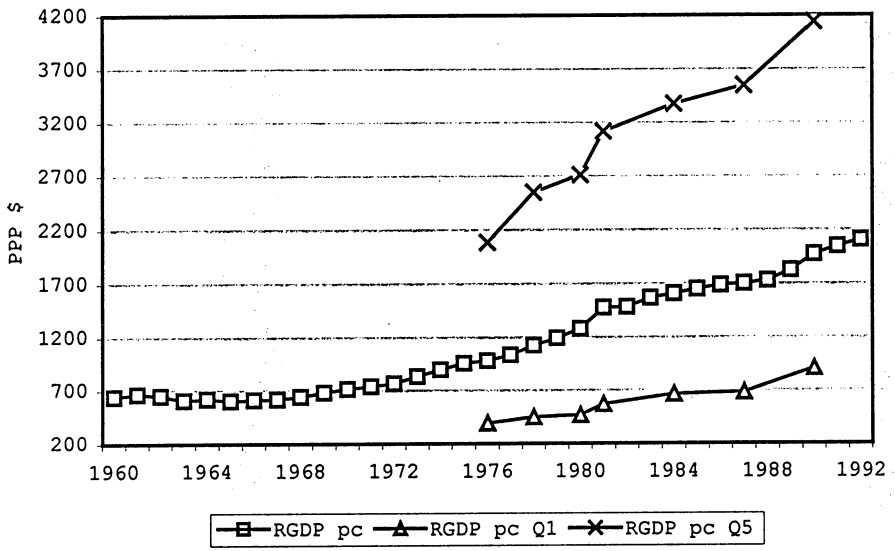

PPP $
4000
3500
3000
2500
2000
1500
1000
500
0
1960 1964 1968 1972 1976 1980 1984 1988 1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

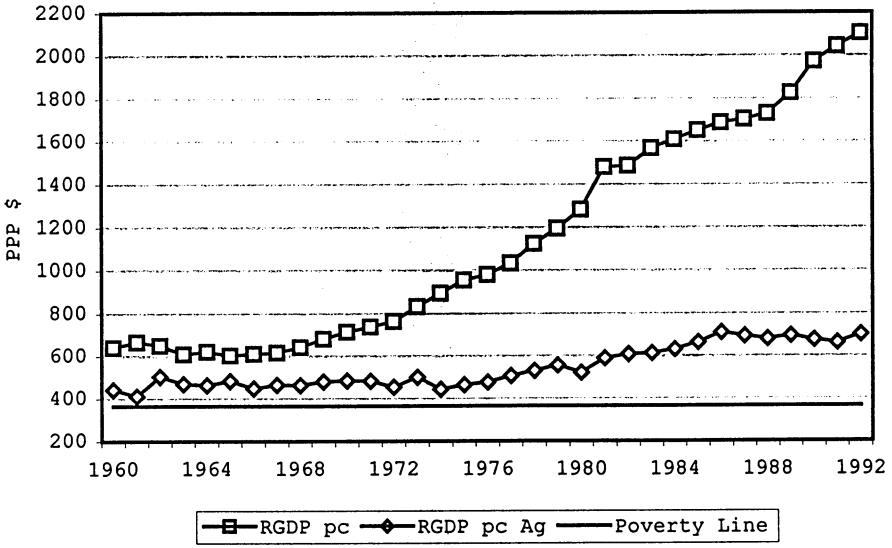

PPP $
1700
1500
1300
1100
900
700
500
300
1960 1964 1968 1972 1976 1980 1984 1988 1992
RGDP pc
RGDP pc Ag
Poverty Line

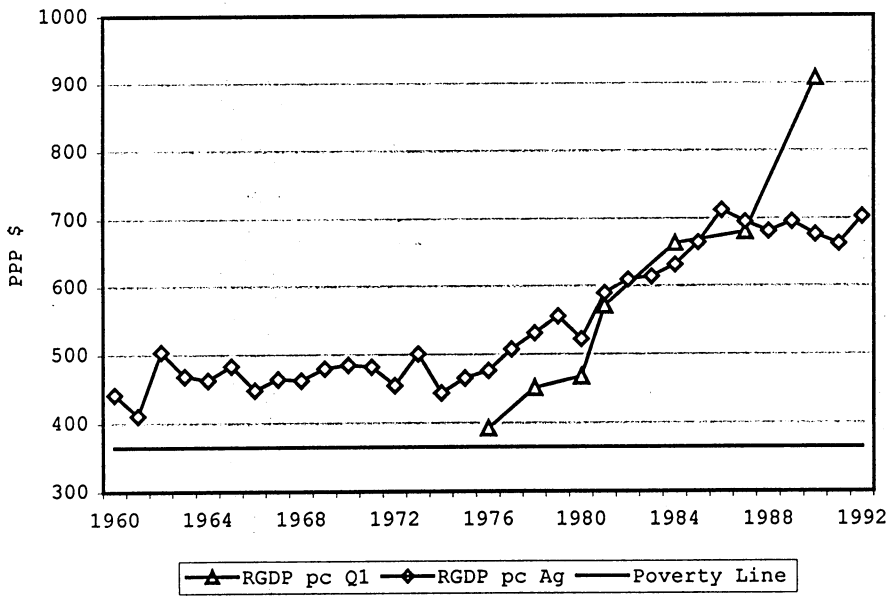

PPP $
800
700
600
500
400
300
200
100
0
1960 1964 1968 1972 1976 1980 1984 1988 1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

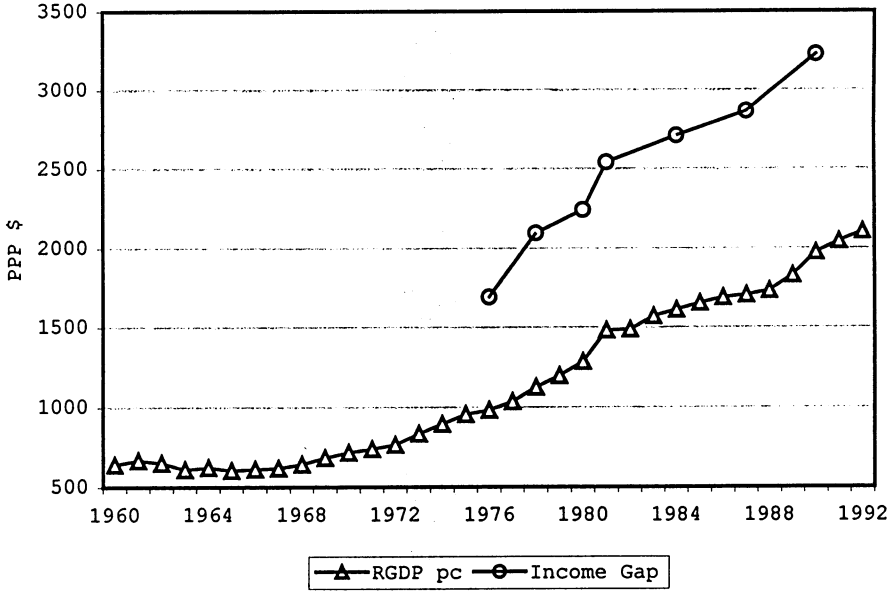

PPP $
4000
3600
3200
2800
2400
2000
1600
1200
800
1960 1964 1968 1972 1976 1980 1984 1988 1992
RGDP pc
Income Gap

Indonesia

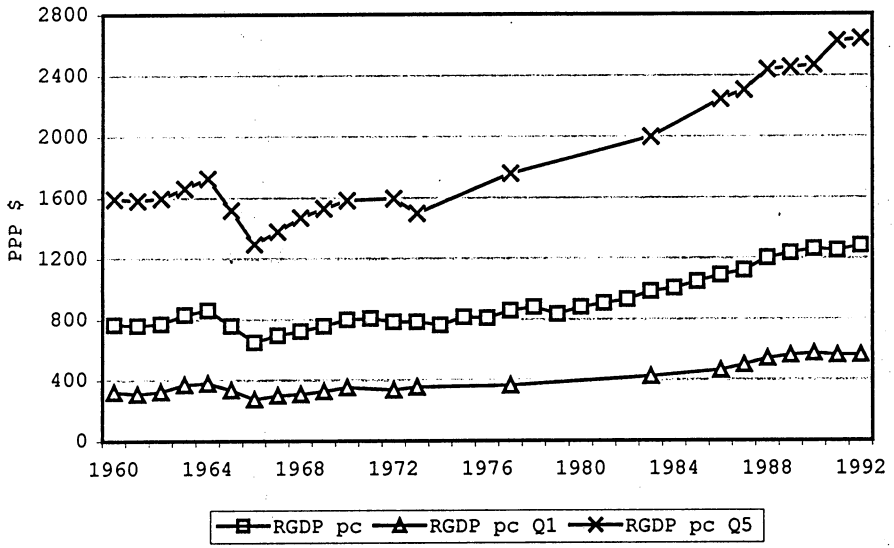

PPP $
4200
3700
3200
2700
2200
1700
1200
700
200
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

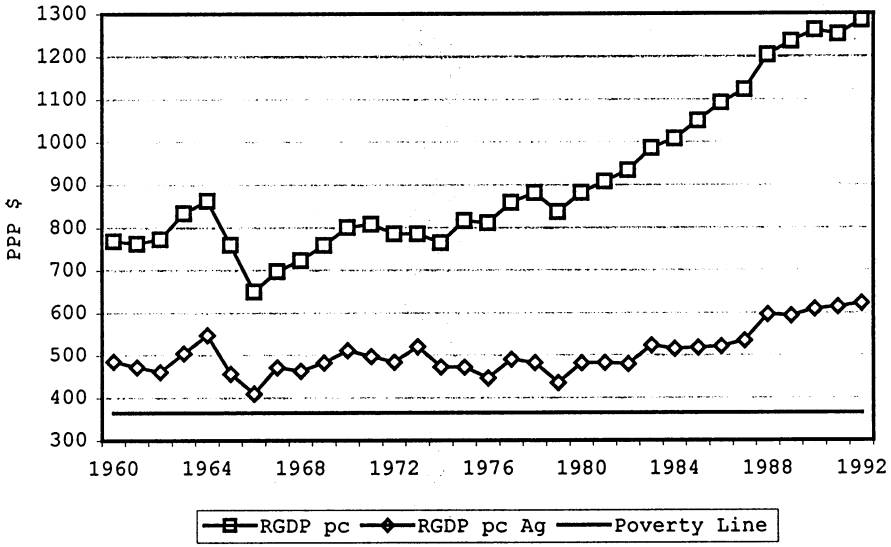

PPP $
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

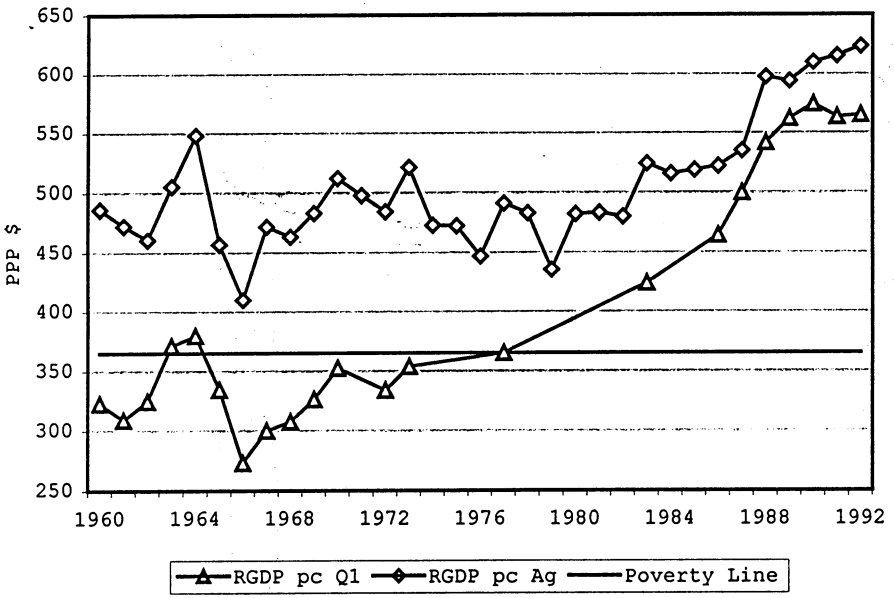

PPP $
1000
900
800
700
600
500
400
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

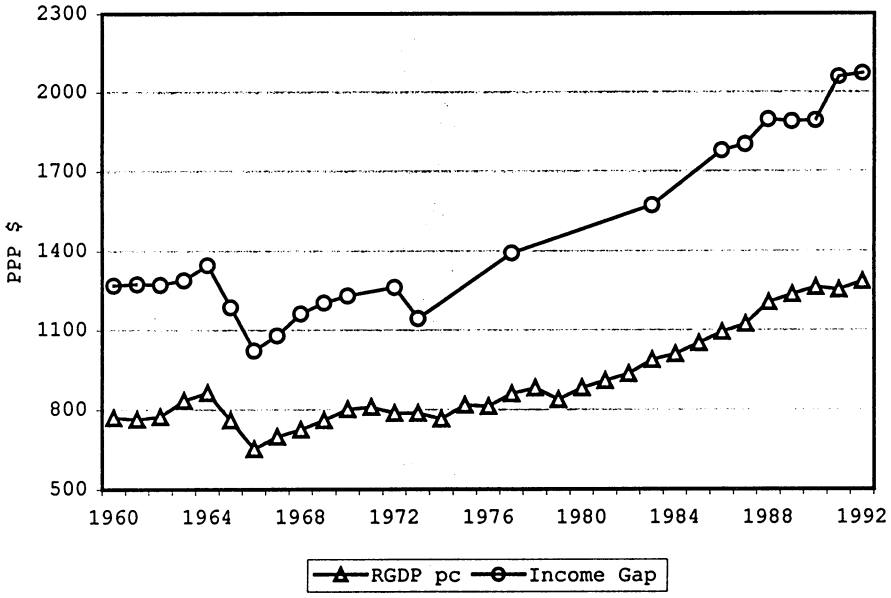

PPP $
3500
3000
2500
2000
1500
1000
500
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

India

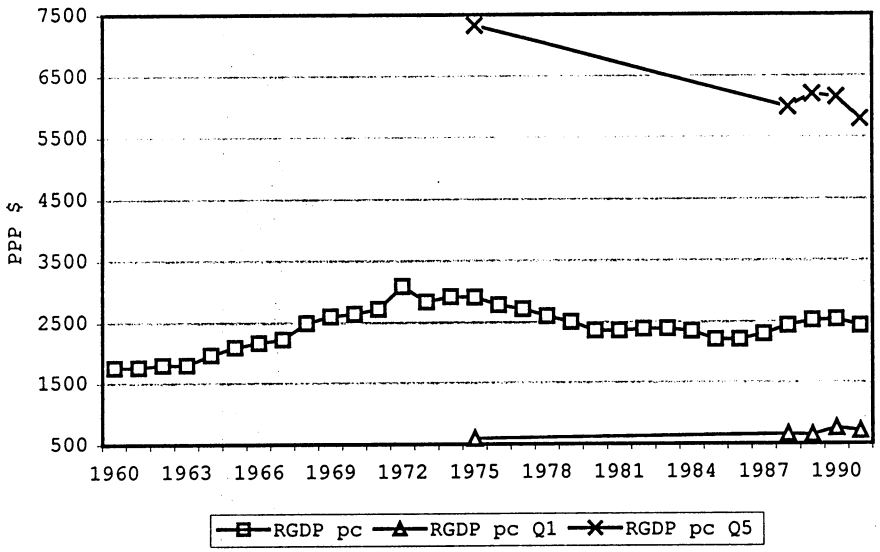

PPP $
2800
2400
2000
1600
1200
800
400
0
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Q1
RGDP pc Q5

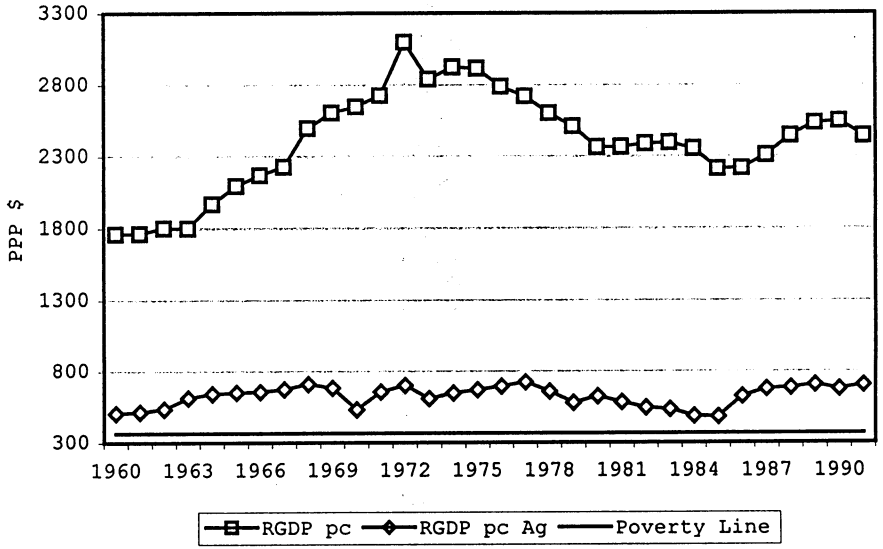

PPP $
1300
1200
1100
1000
900
800
700
600
500
400
300
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
RGDP pc Ag
Poverty Line

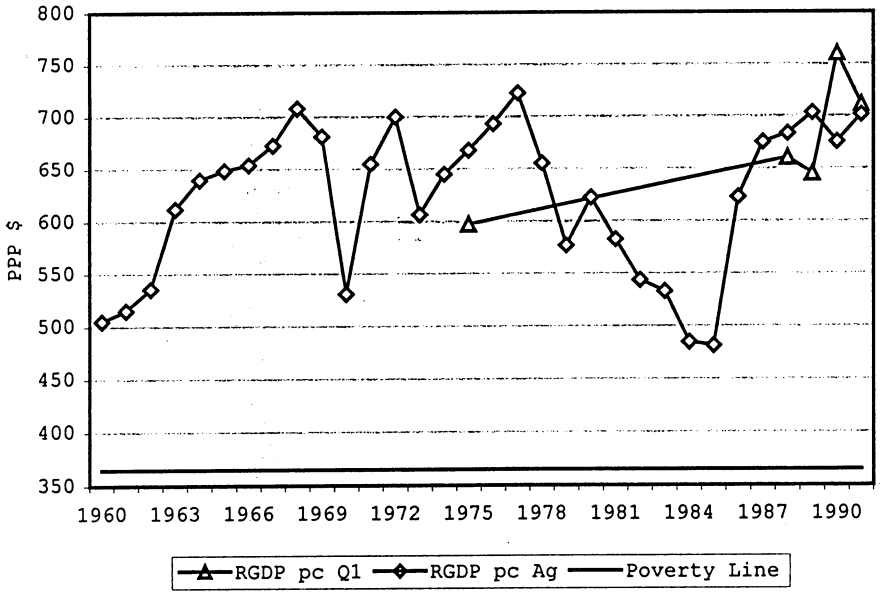

PPP $
650
600
550
500
450
400
350
300
250
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc Q1
RGDP pc Ag
Poverty Line

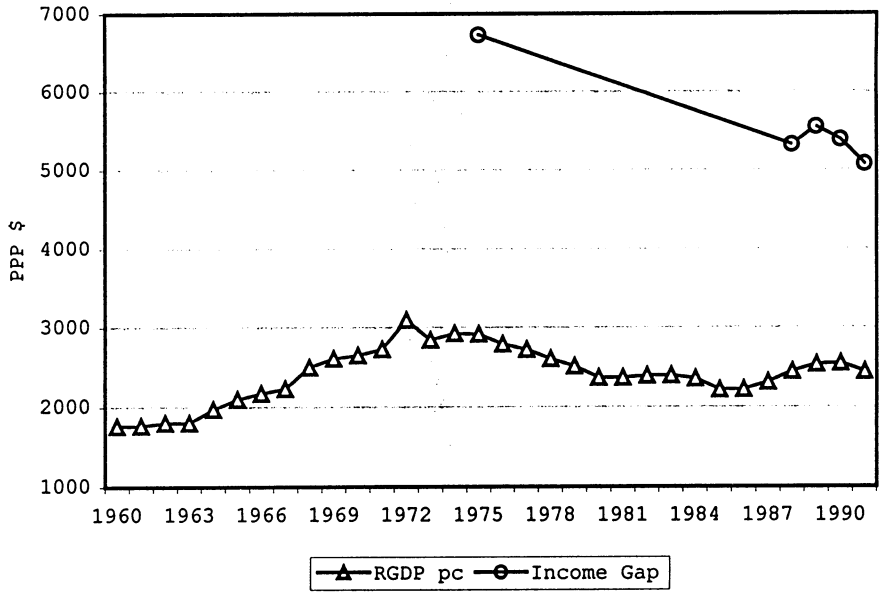

PPP $
2300
2000
1700
1400
1100
800
500
1960
1964
1968
1972
1976
1980
1984
1988
1992
RGDP pc
Income Gap

Jamaica

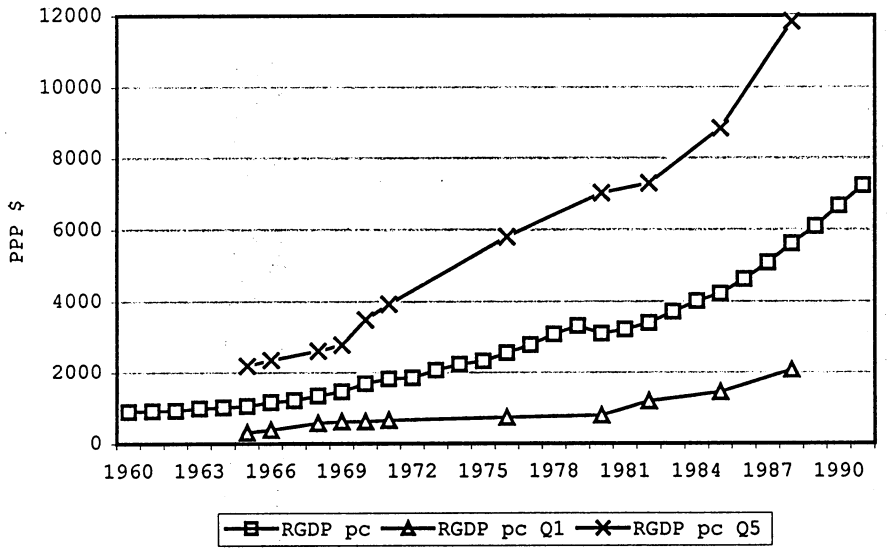

PPP $
7500
6500
5500
4500
3500
2500
1500
500
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

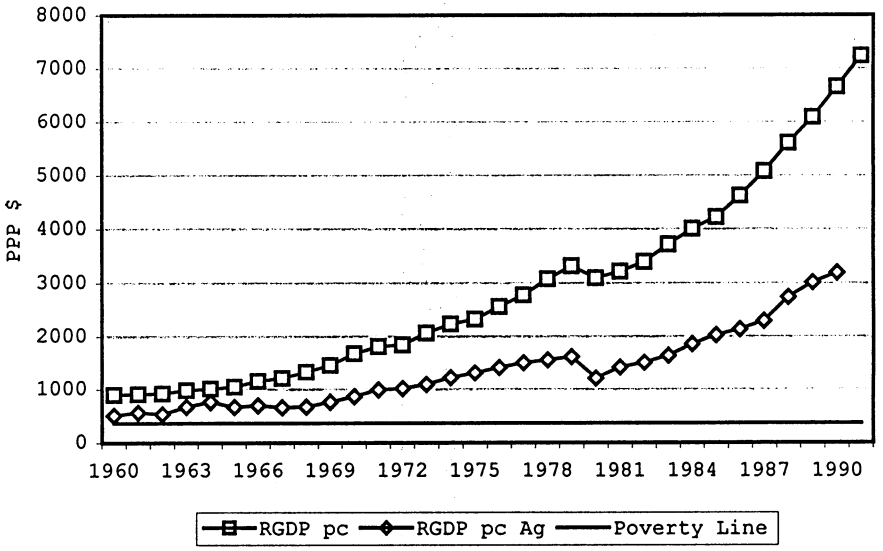

PPP $
3300
2800
2300
1800
1300
800
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

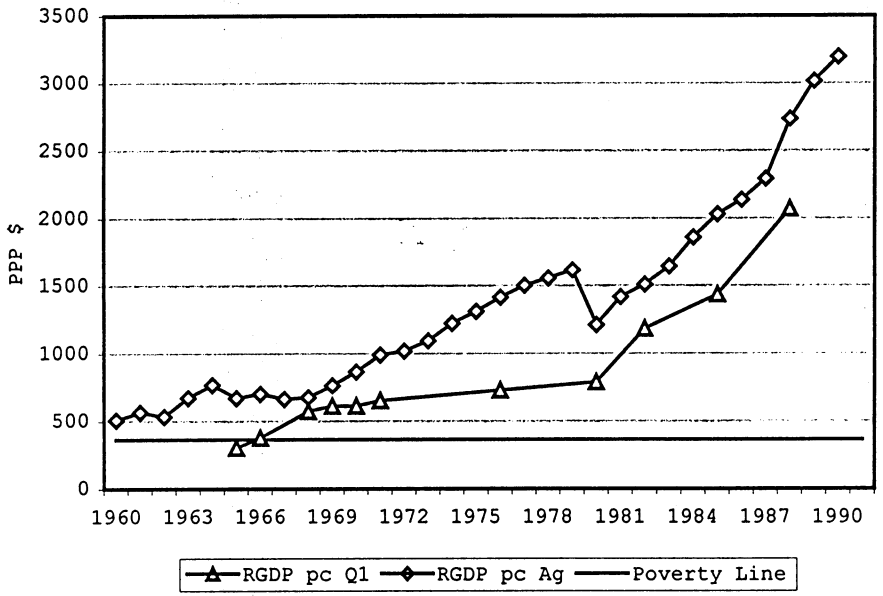

PPP $
800
750
700
650
600
550
500
450
400
350
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

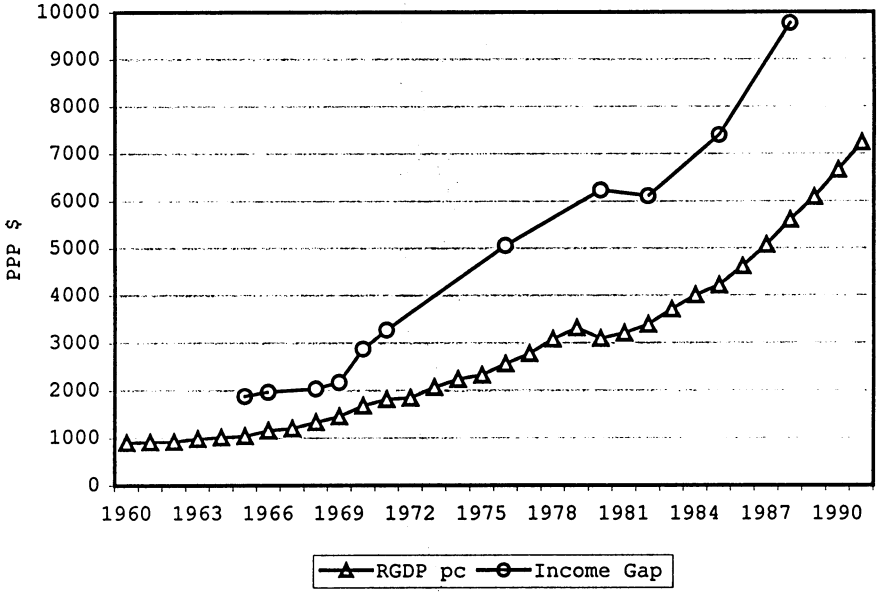

PPP $
7000
6000
5000
4000
3000
2000
1000
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Korea

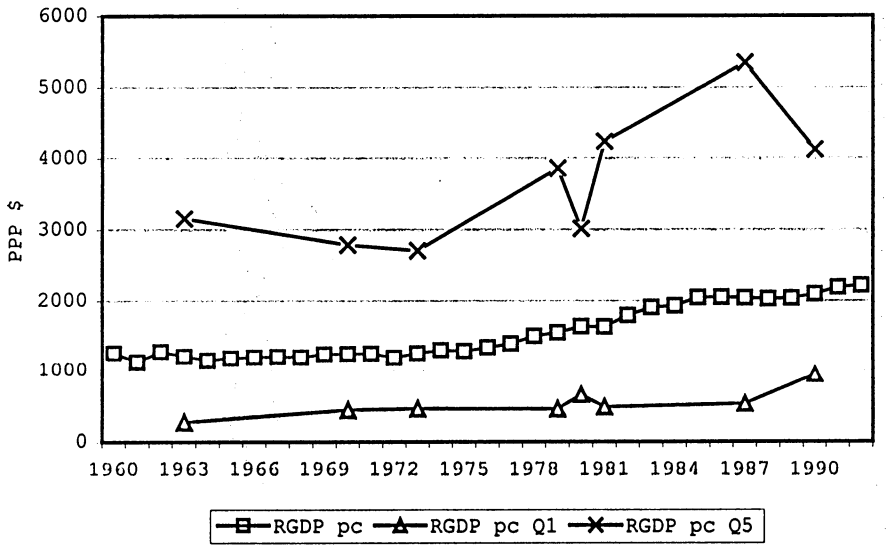

PPP $
12000
10000
8000
6000
4000
2000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

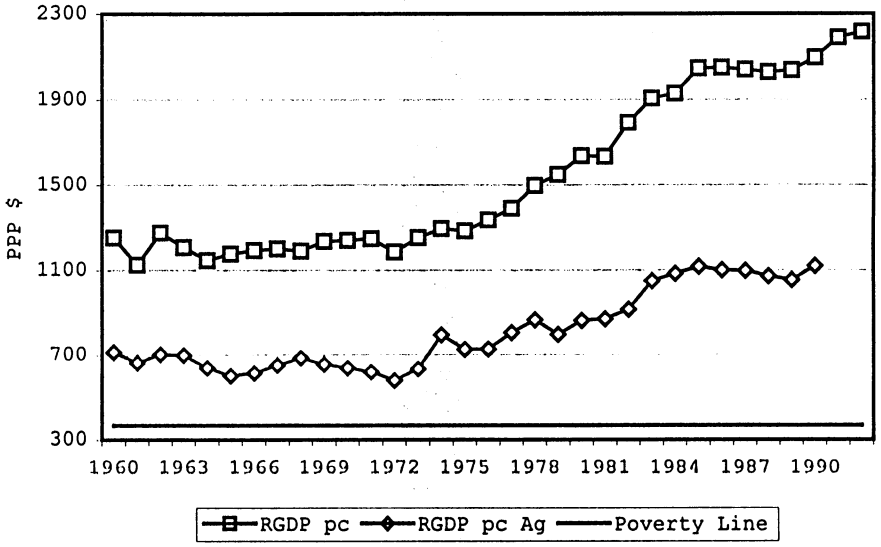

PPP $
8000
7000
6000
5000
4000
3000
2000
1000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

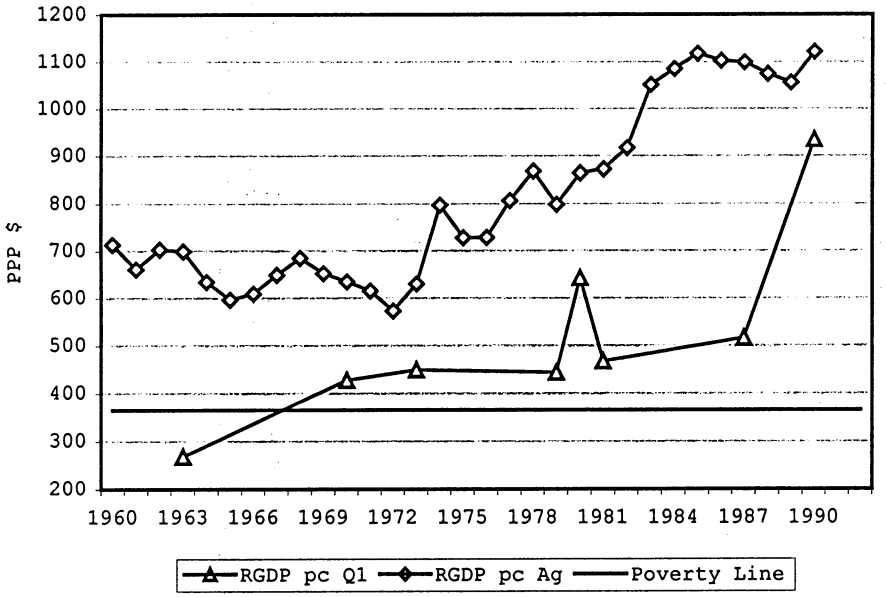

PPP $
3500
3000
2500
2000
1500
1000
500
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

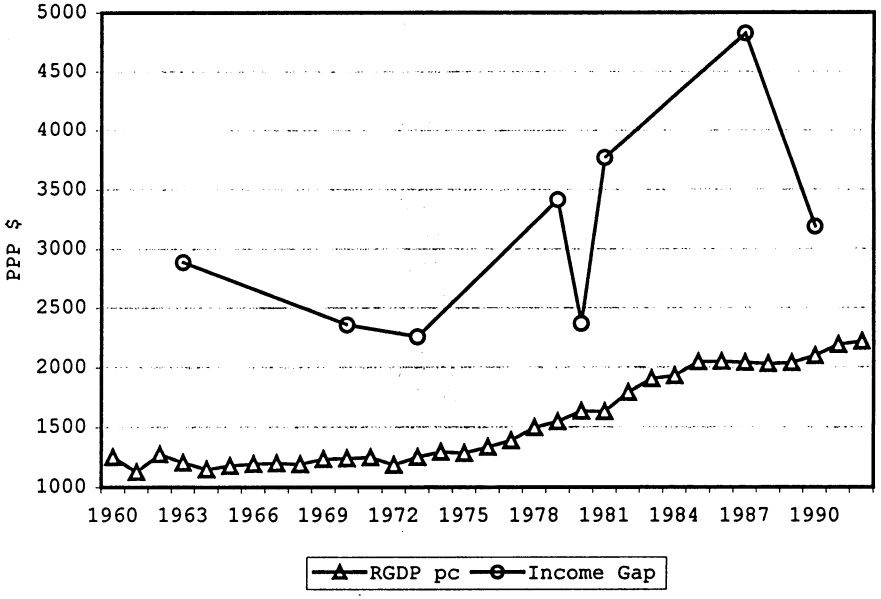

PPP $
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Sri Lank

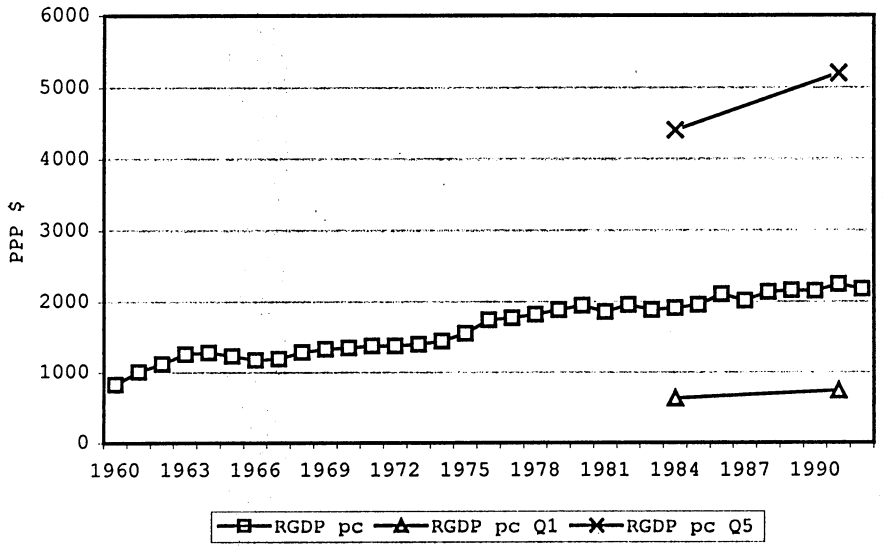

PPP $
6000
5000
4000
3000
2000
1000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

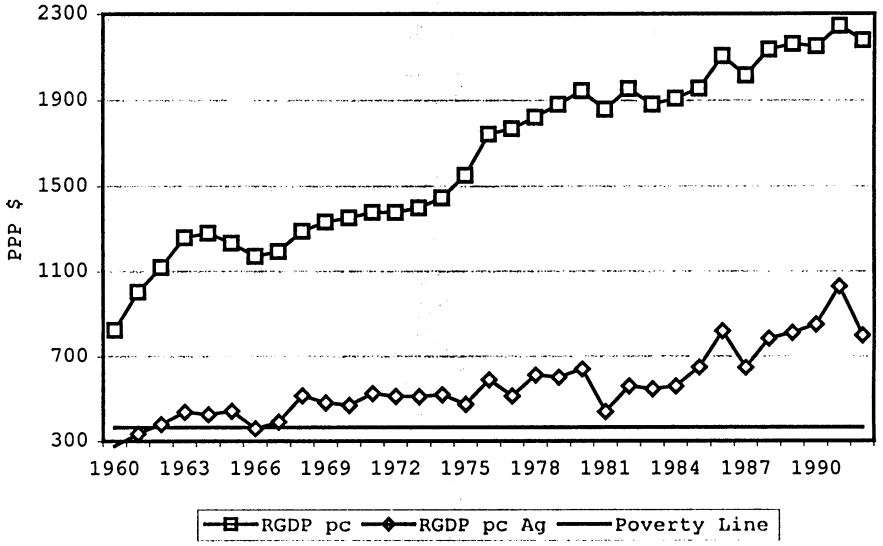

PPP $
2300
1900
1500
1100
700
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

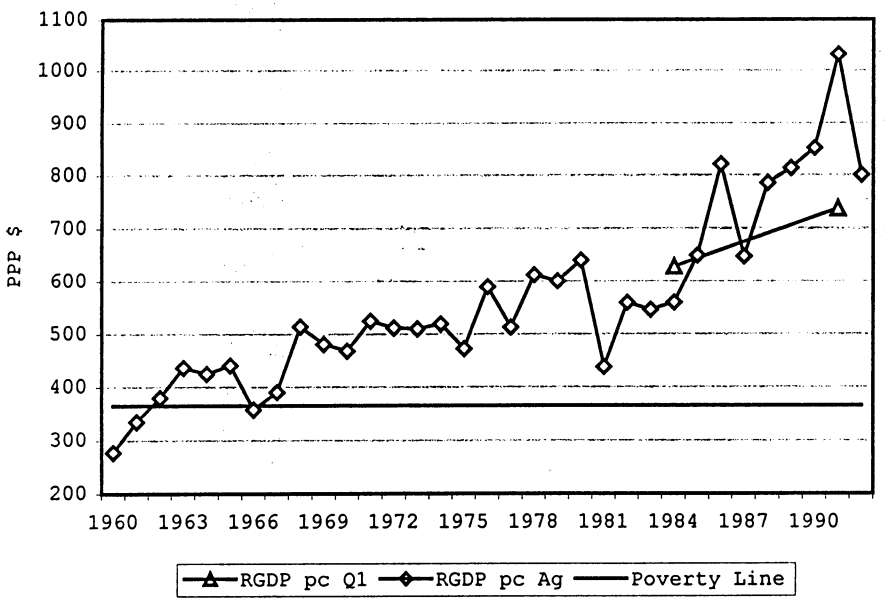

PPP $
1200
1100
1000
900
800
700
600
500
400
300
200
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

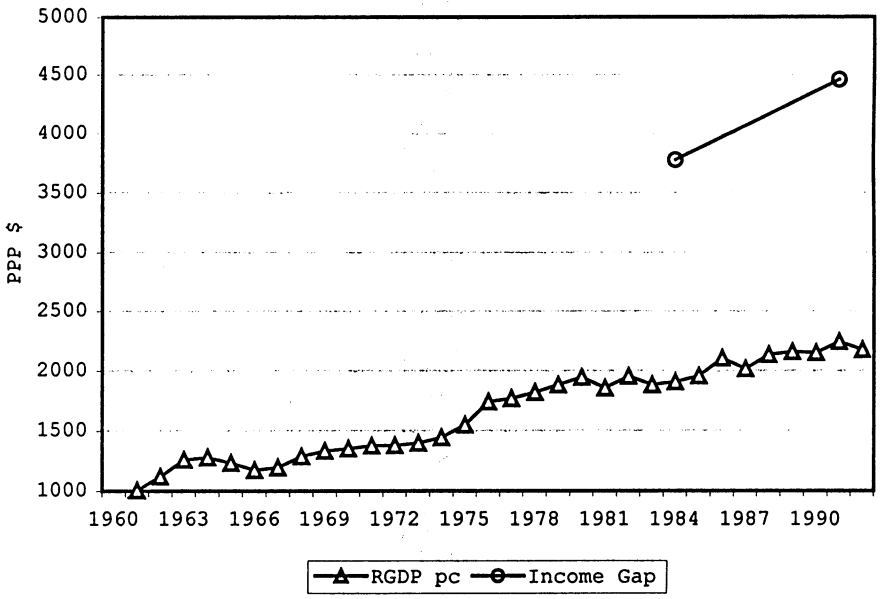

PPP $
5000
4500
4000
3500
3000
2500
2000
1500
1000
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Morocco

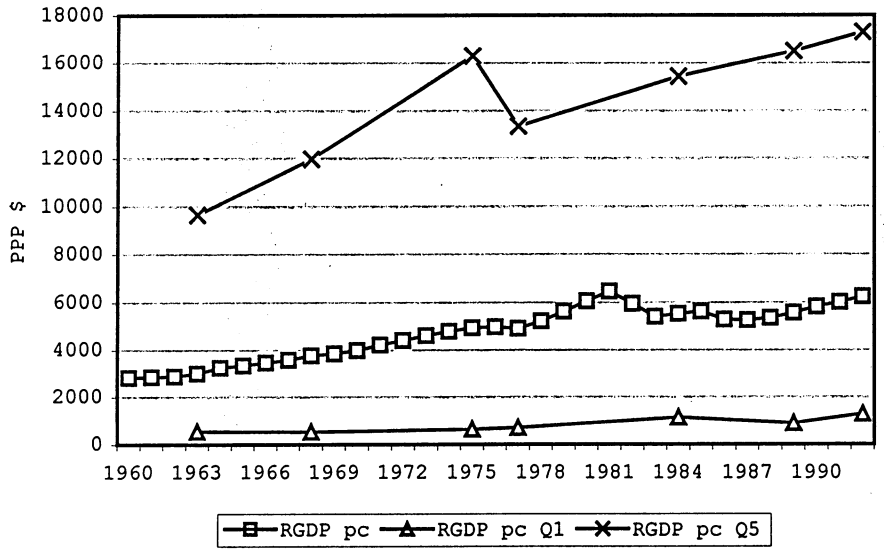

PPP $
6000
5000
4000
3000
2000
1000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

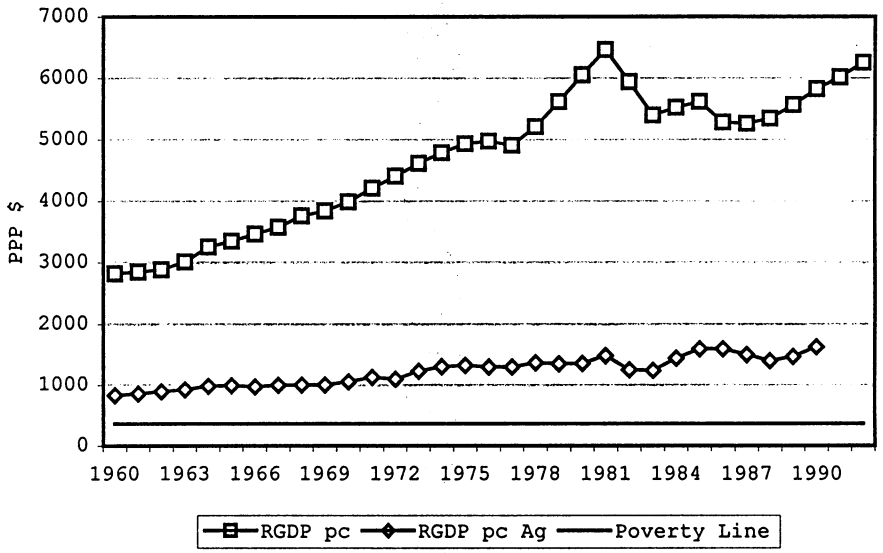

PPP $
2300
1900
1500
1100
700
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

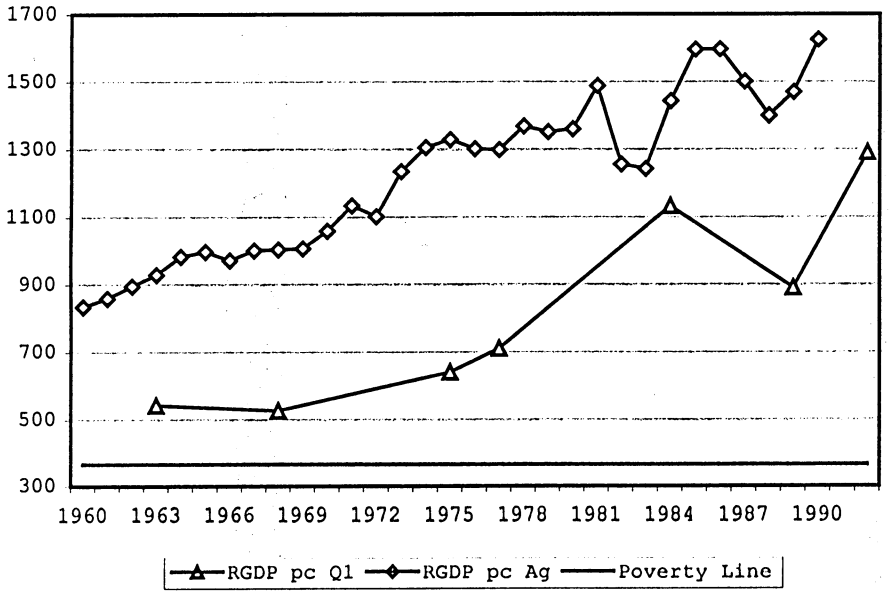

PPP $
1100
1000
900
800
700
600
500
400
300
200
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

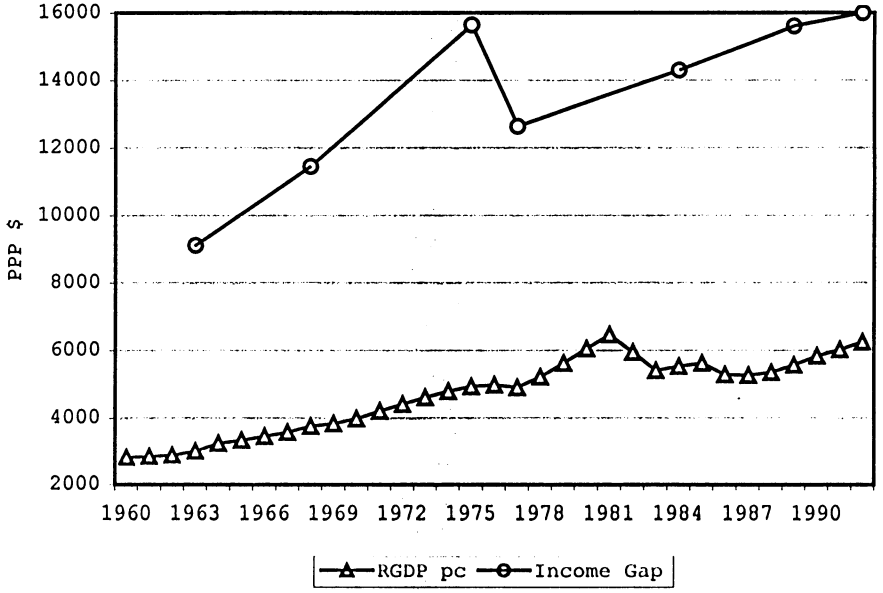

PPP $
5000
4500
4000
3500
3000
2500
2000
1500
1000
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Mexico

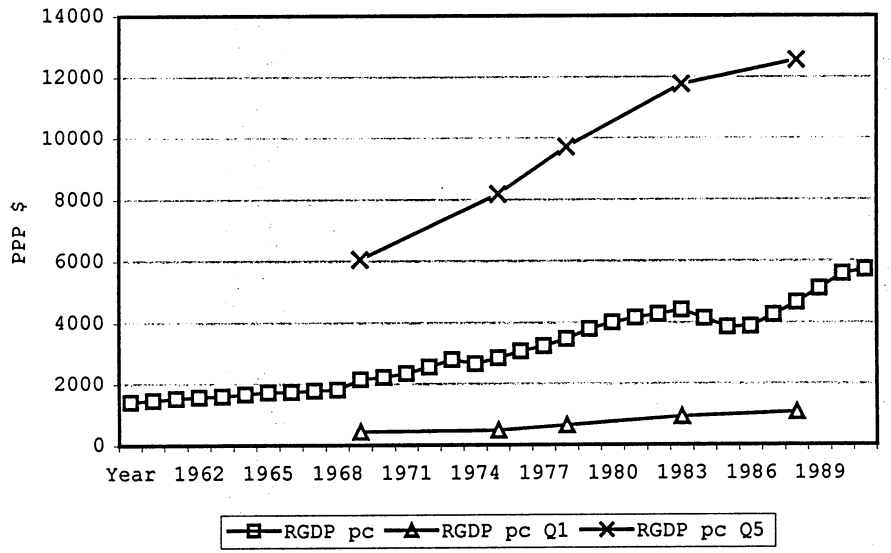

18000
16000
14000
12000
10000
8000
6000
4000
2000
0
PPP $
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

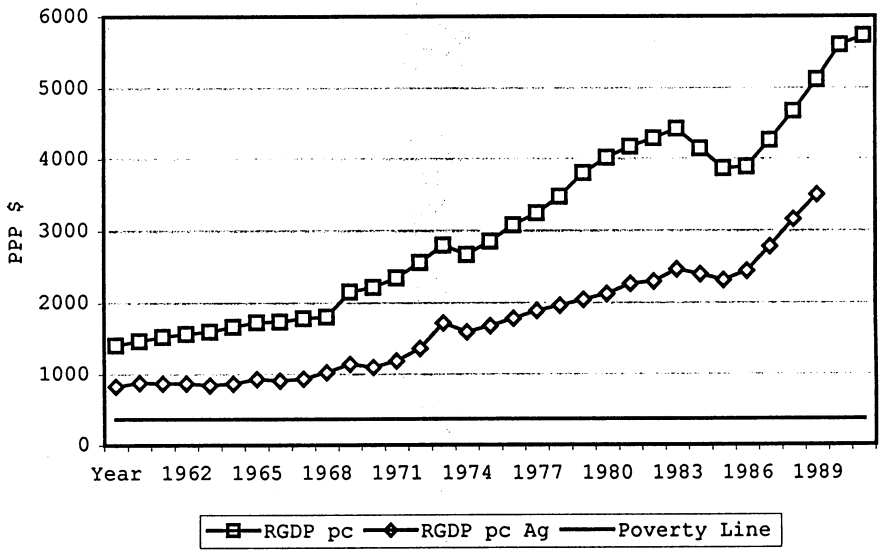

7000
6000
5000
4000
3000
2000
1000
0
PPP $
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

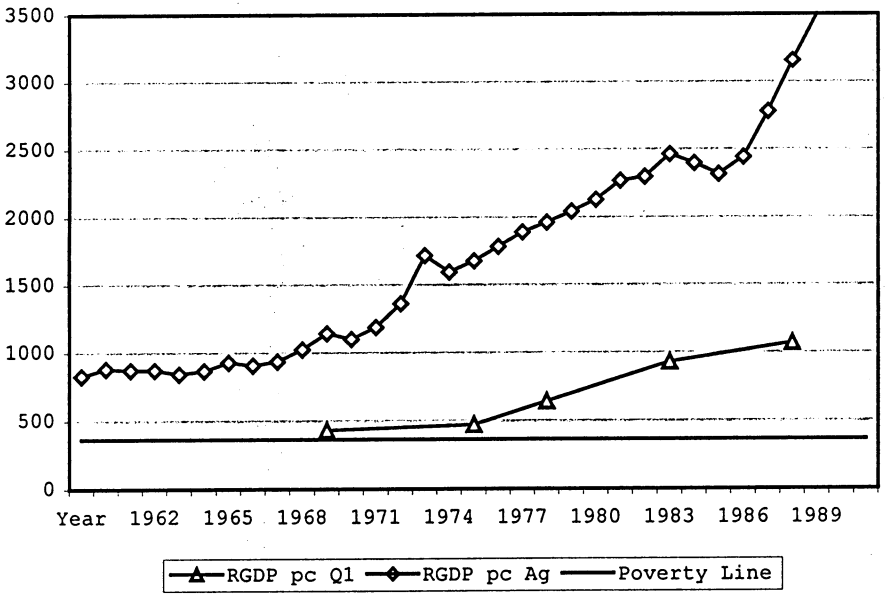

1700
1500
1300
1100
900
700
500
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

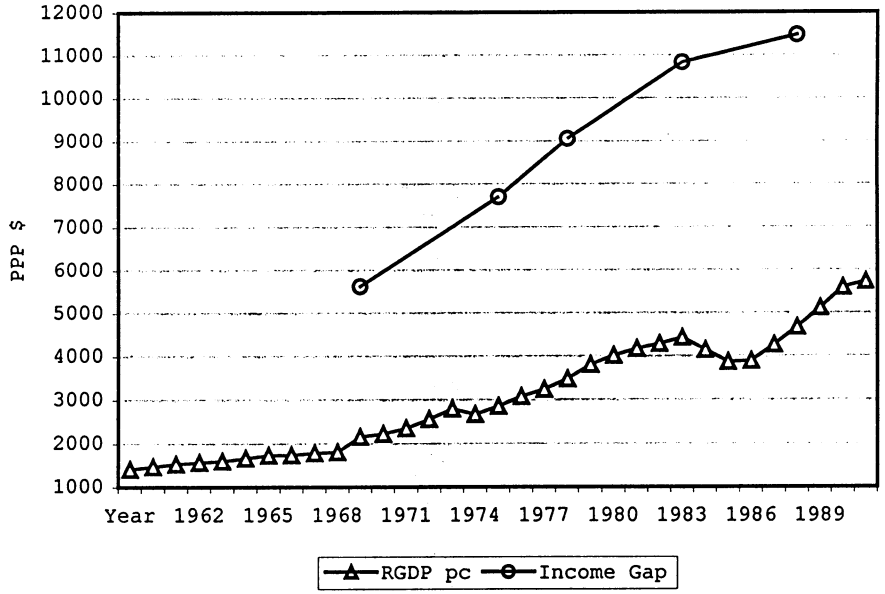

16000
14000
12000
10000
8000
6000
4000
2000
PPP $
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Malaysia

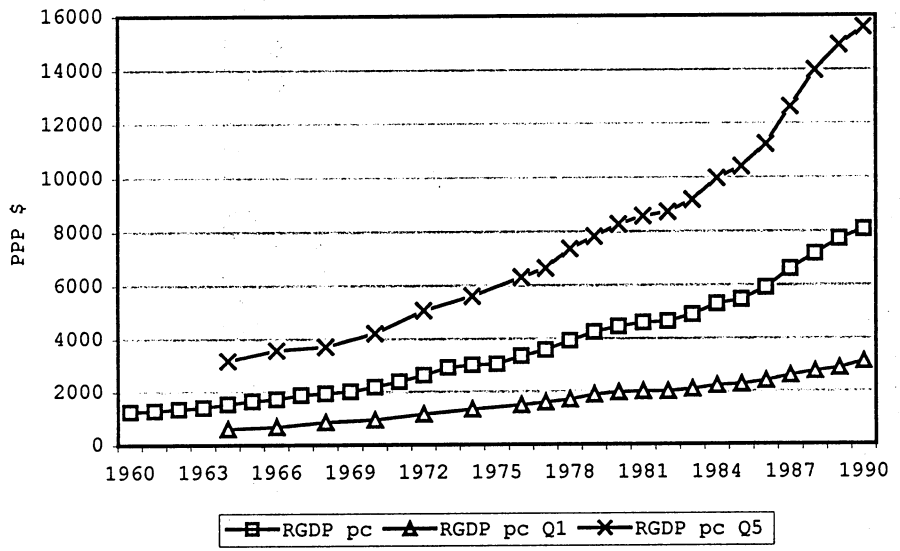

14000
12000
10000
8000
6000
4000
2000
0
PPP $
Year 1962 1965 1968 1971 1974 1977 1980 1983 1986 1989
RGDP pc
RGDP pc Q1
RGDP pc Q5

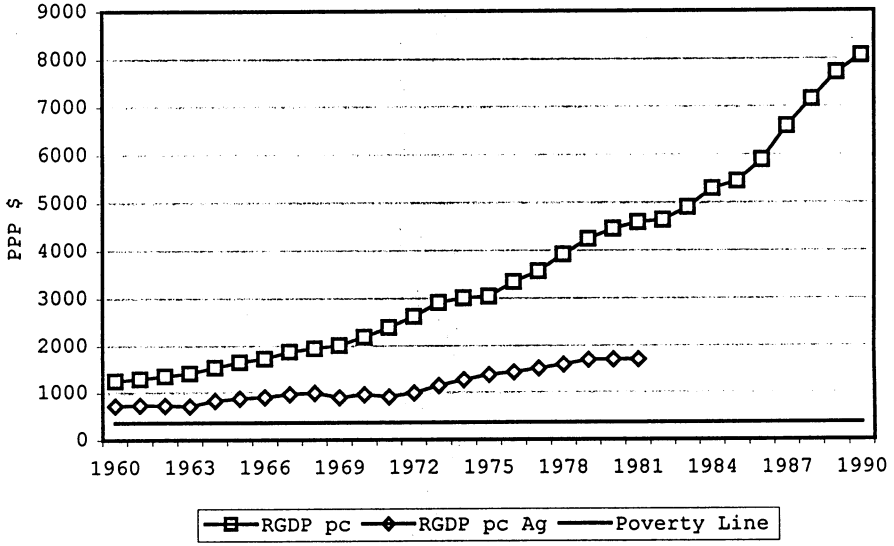

6000
5000
4000
3000
2000
1000
0
PPP $
Year 1962 1965 1968 1971 1974 1977 1980 1983 1986 1989
RGDP pc
RGDP pc Ag
Poverty Line

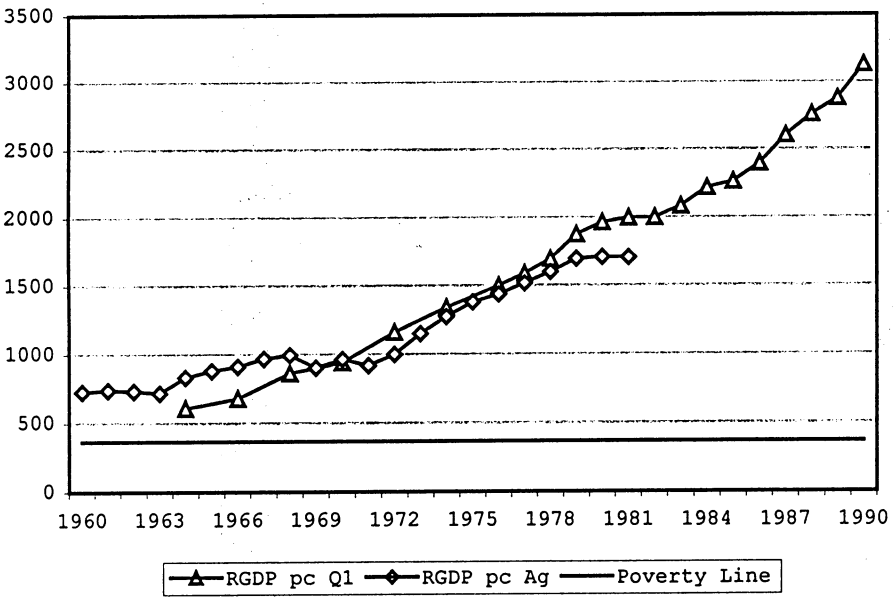

3500
3000
2500
2000
1500
1000
500
0
Year 1962 1965 1968 1971 1974 1977 1980 1983 1986 1989
RGDP pc Q1
RGDP pc Ag
Poverty Line

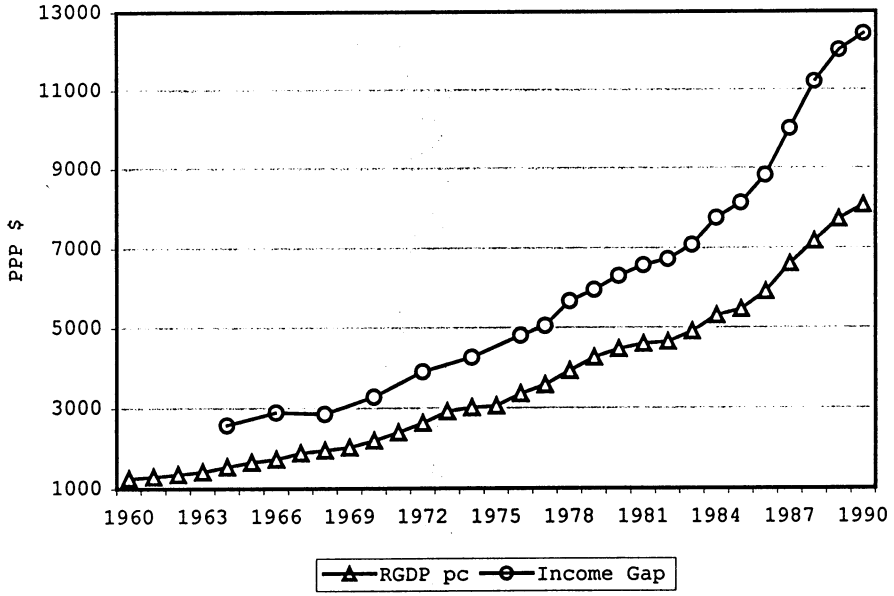

12000
11000
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
PPP $
Year 1962 1965 1968 1971 1974 1977 1980 1983 1986 1989
RGDP pc
Income Gap

Taiwan

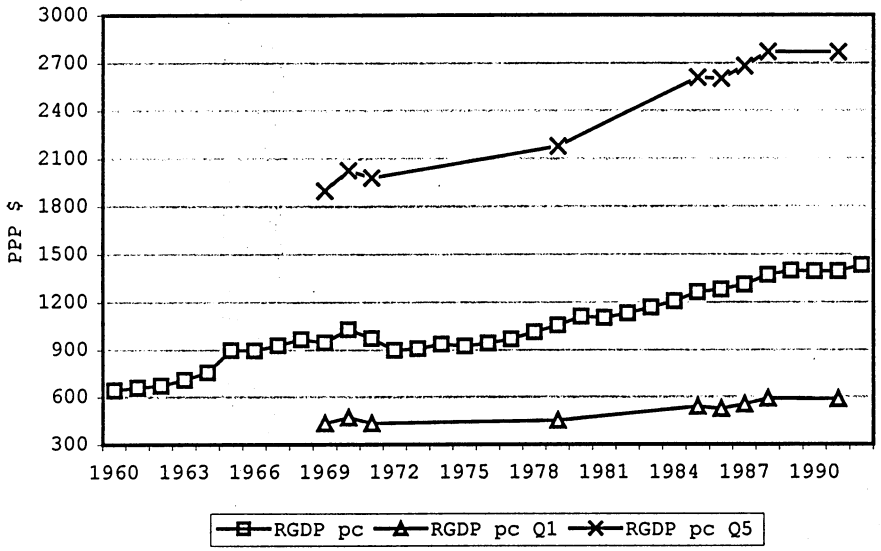

PPP $
16000
14000
12000
10000
8000
6000
4000
2000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

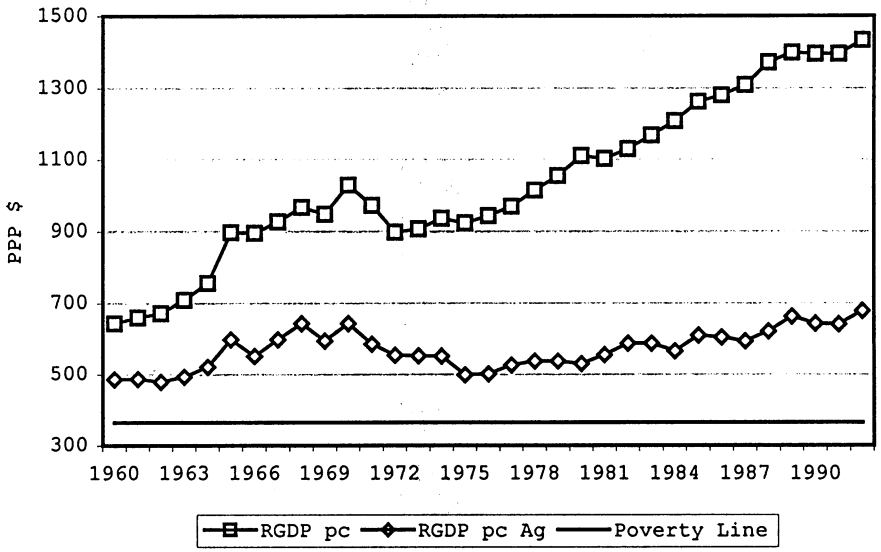

PPP $
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

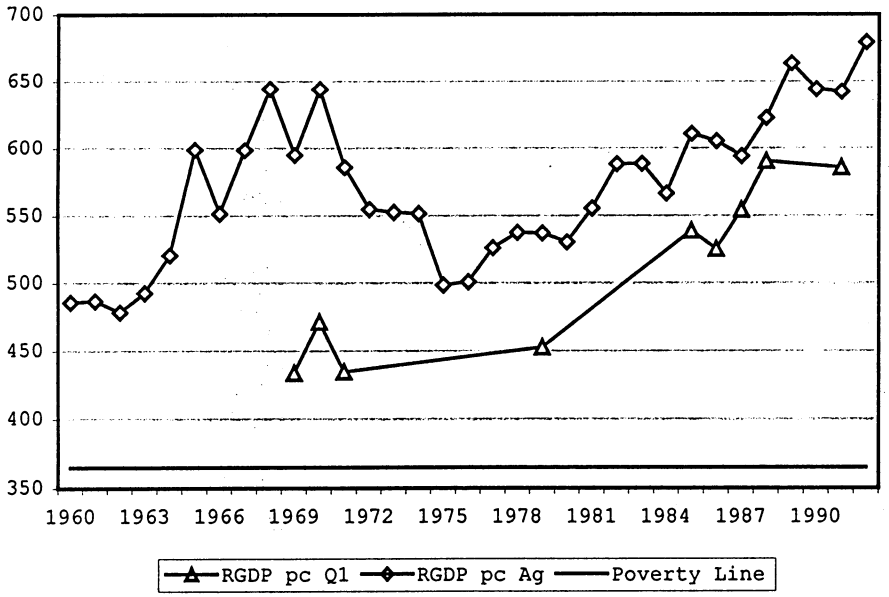

3500
3000
2500
2000
1500
1000
500
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

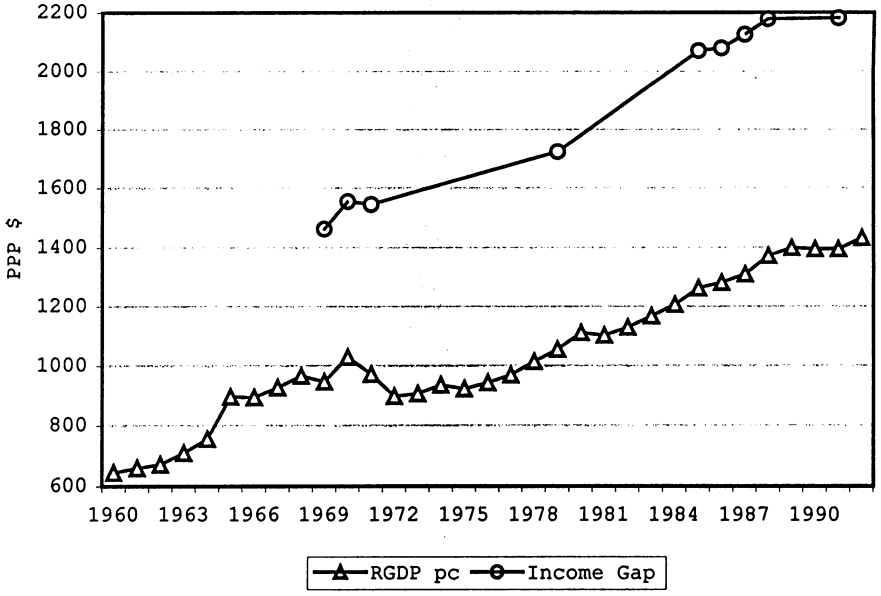

PPP $
13000
11000
9000
7000
5000
3000
1000
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Pakistan

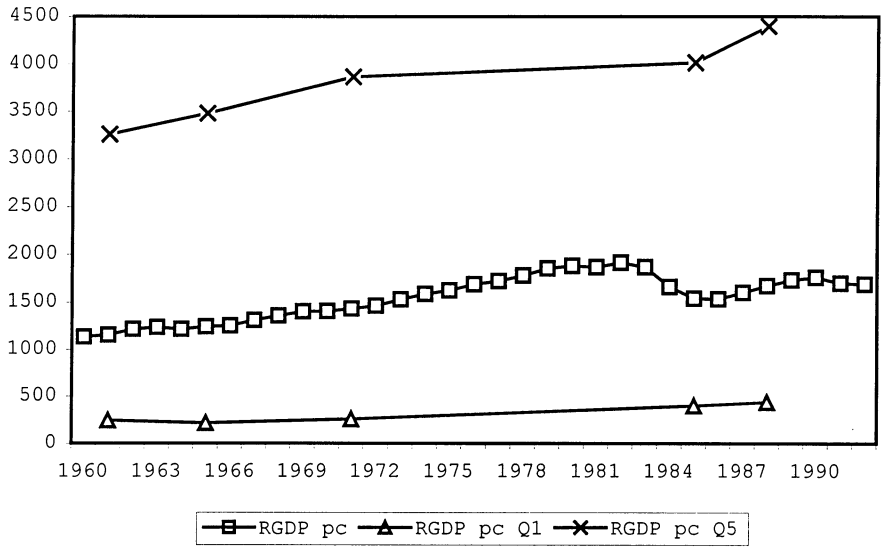

PPP $
3000
2700
2400
2100
1800
1500
1200
900
600
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

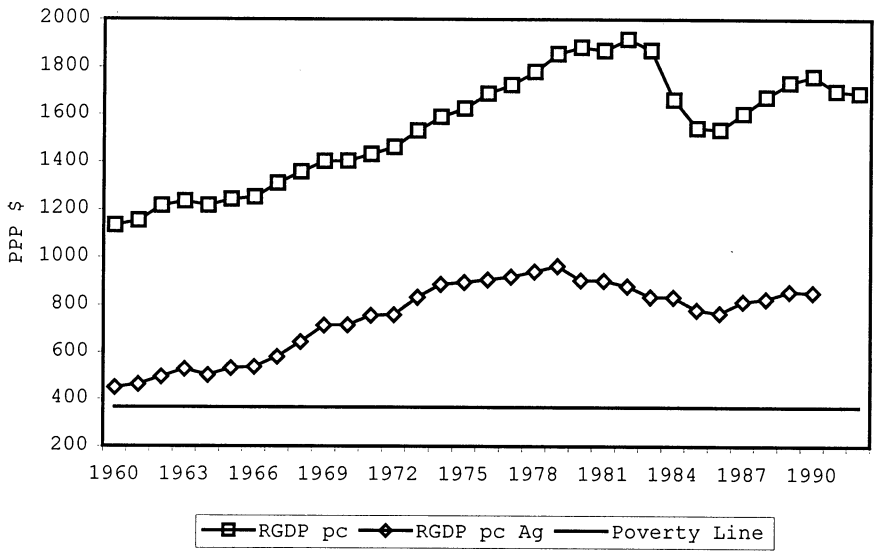

PPP $
1500
1300
1100
900
700
500
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

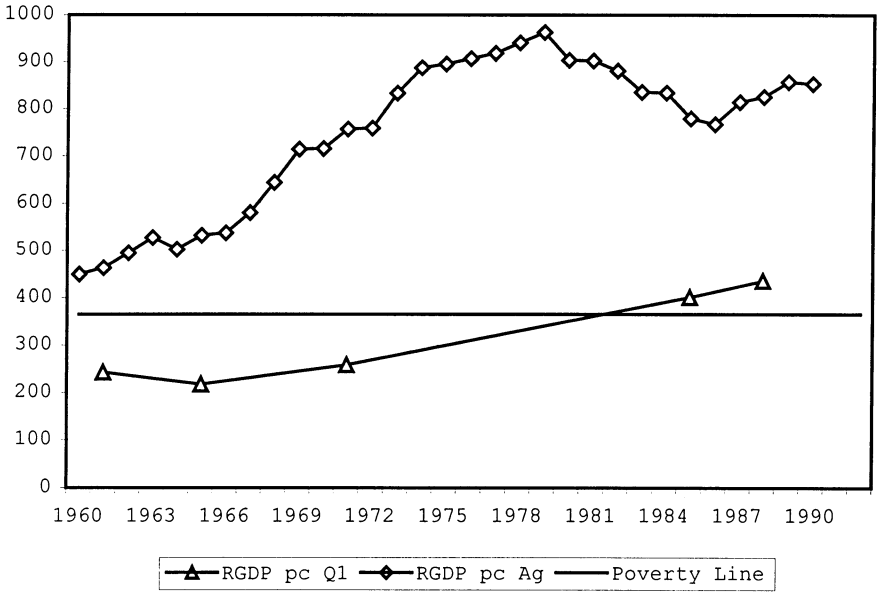

700
650
600
550
500
450
400
350
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

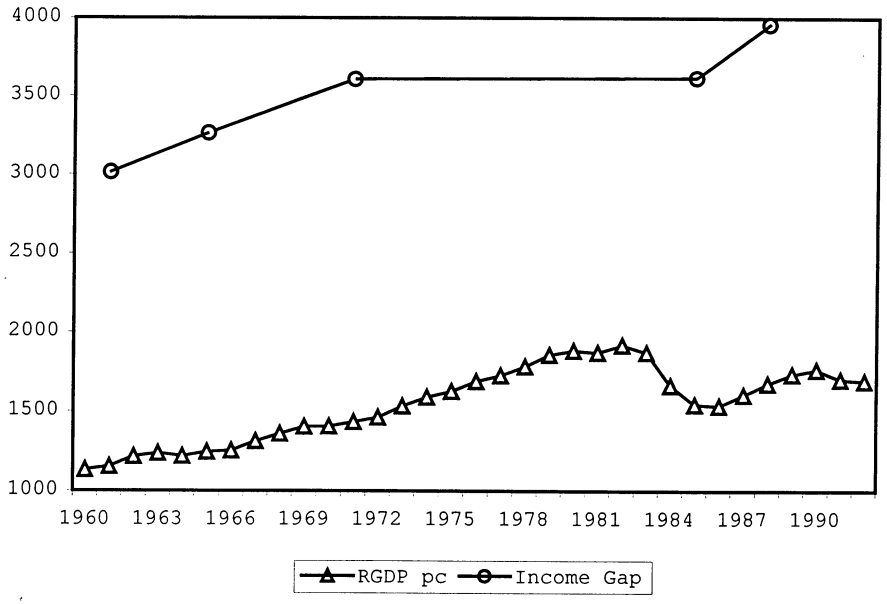

PPP $
2200
2000
1800
1600
1400
1200
1000
800
600
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Philippines

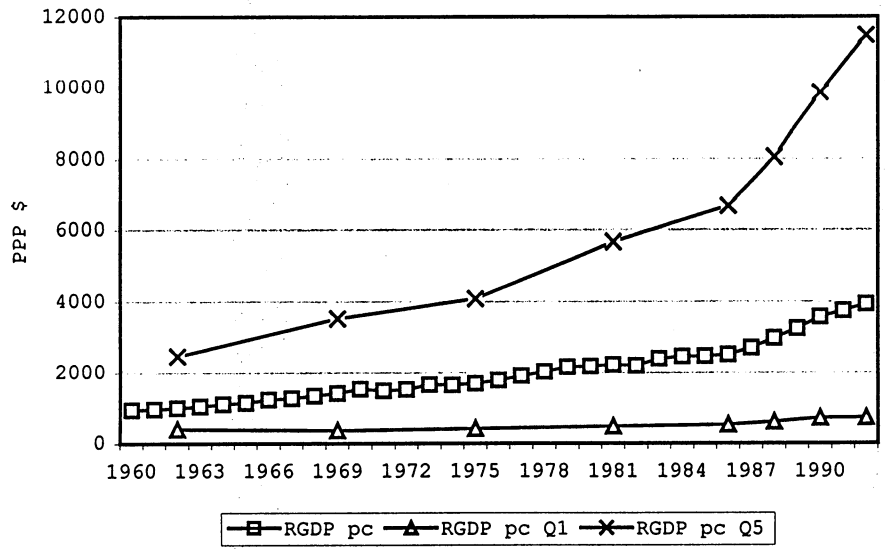


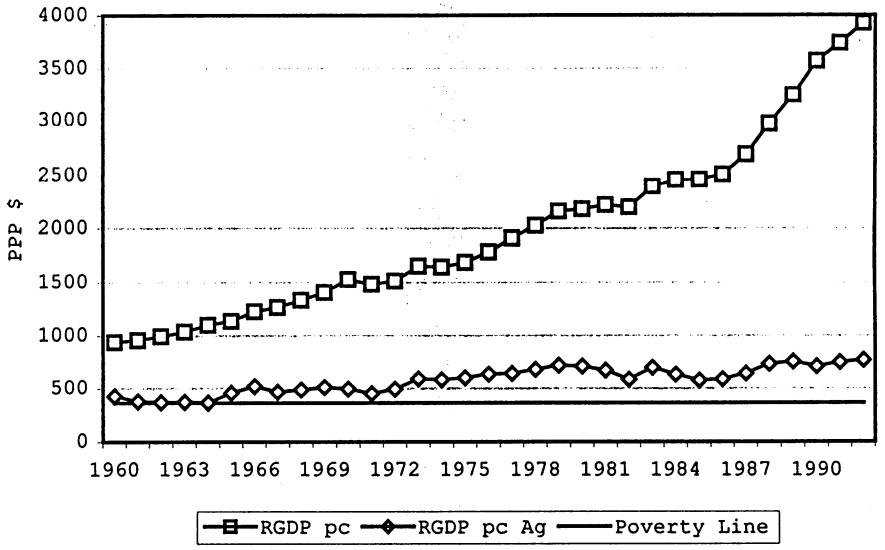


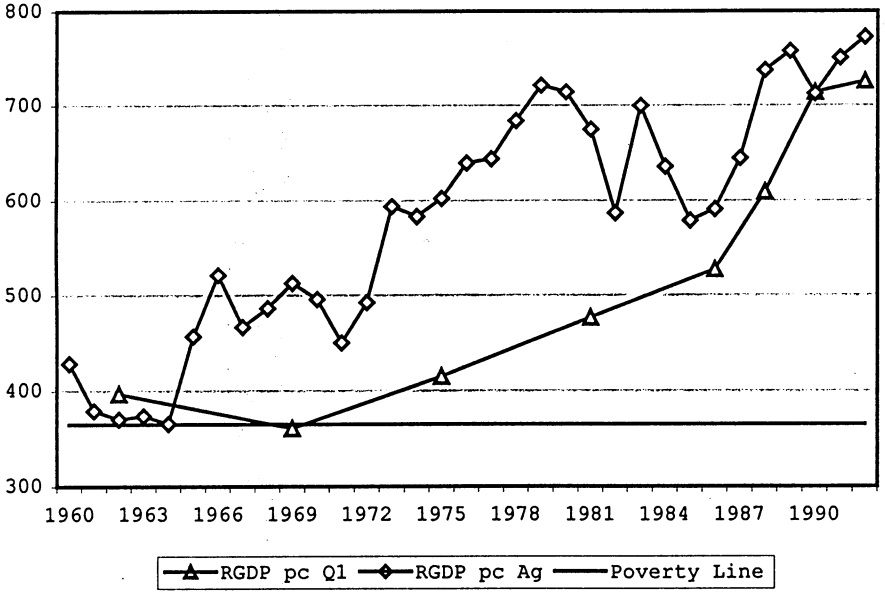


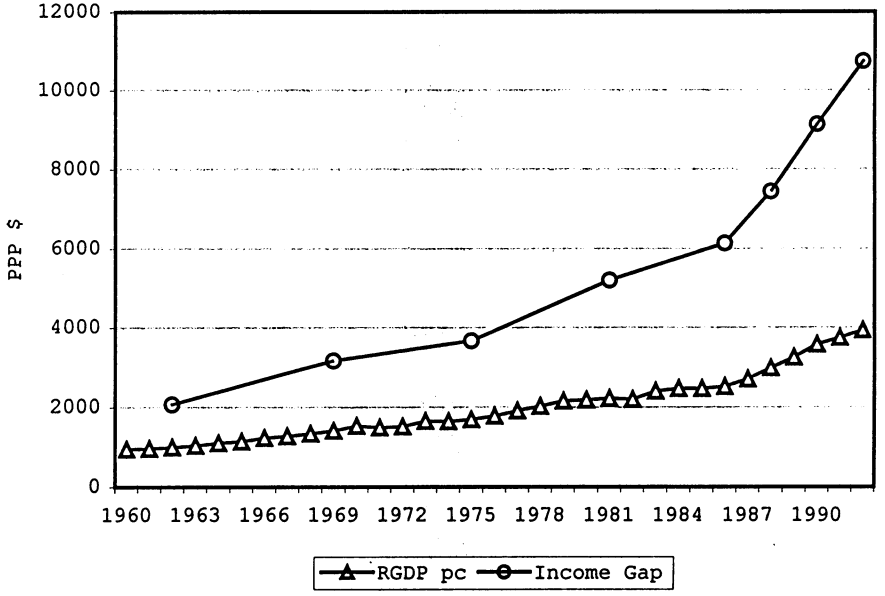


Thailand

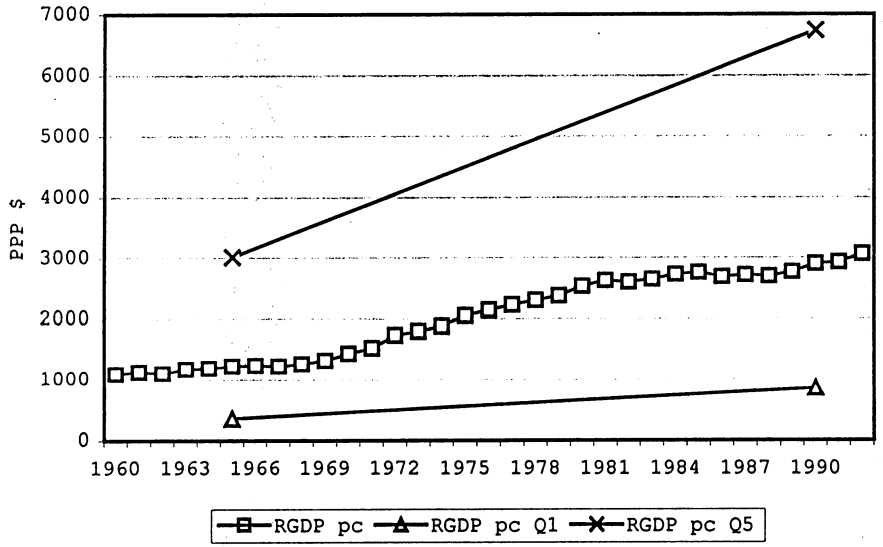

12000
10000
8000
6000
4000
2000
0
PPP $
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

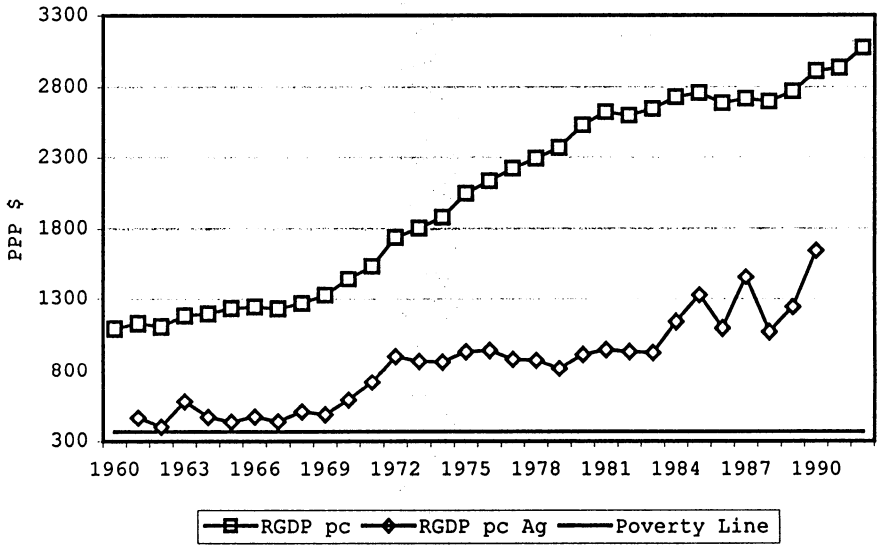

4000
3500
3000
2500
2000
1500
1000
500
0
PPP $
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

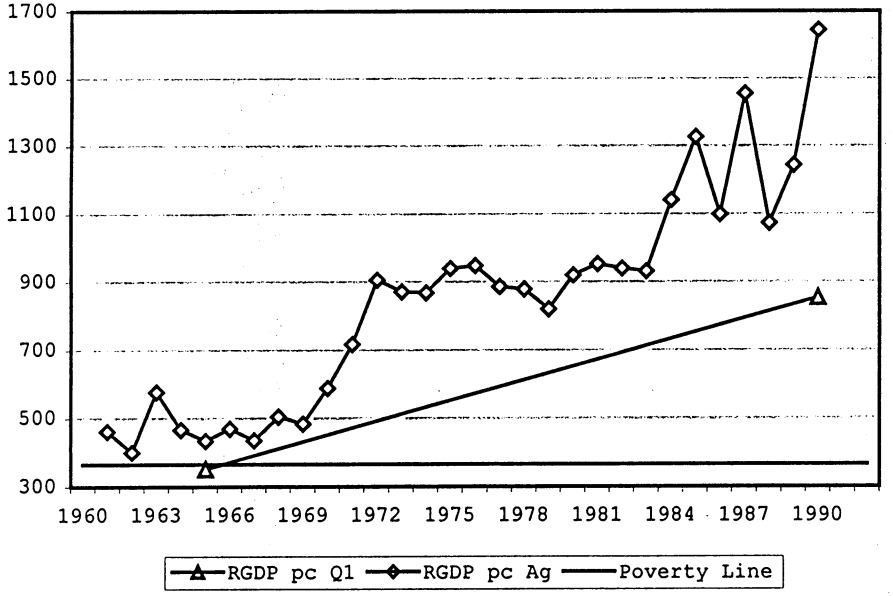

800
700
600
500
400
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

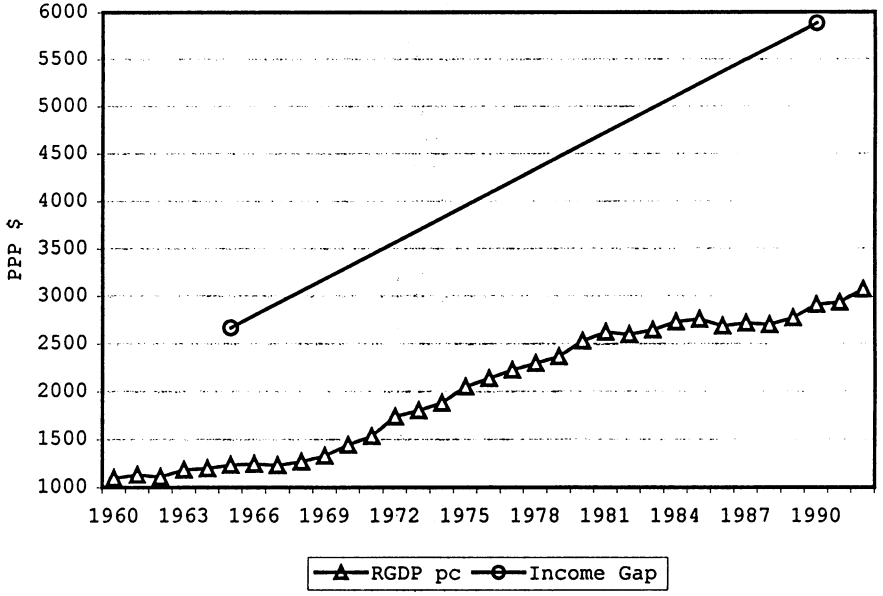

12000
10000
8000
6000
4000
2000
0
PPP $
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Tunisia

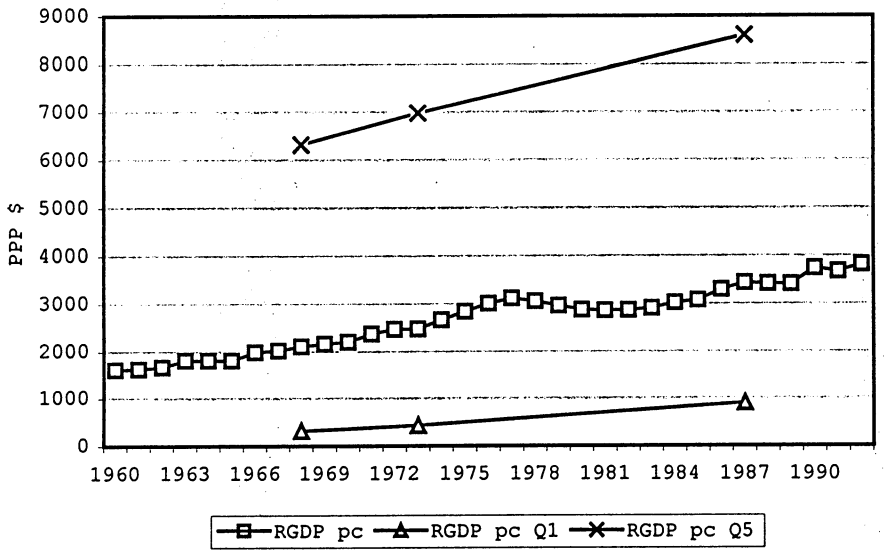

PPP $
7000
6000
5000
4000
3000
2000
1000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

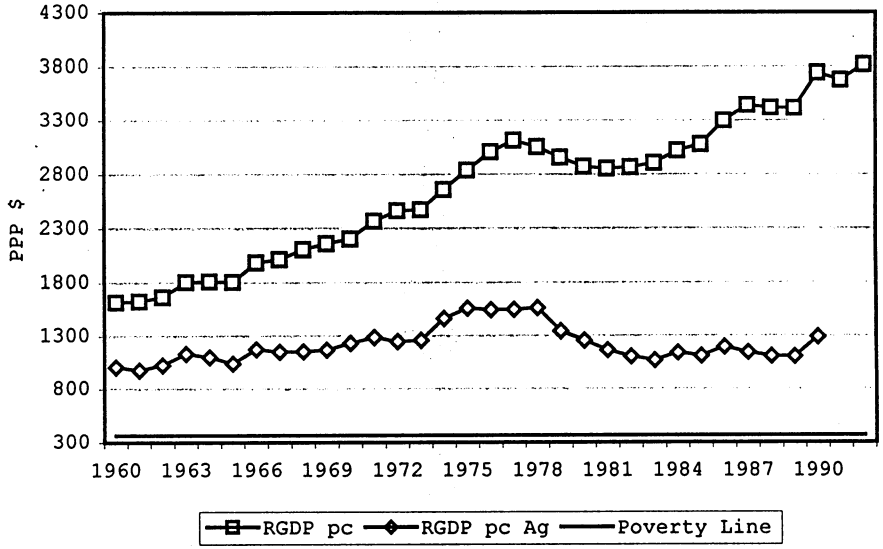

PPP $
3300
2800
2300
1800
1300
800
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

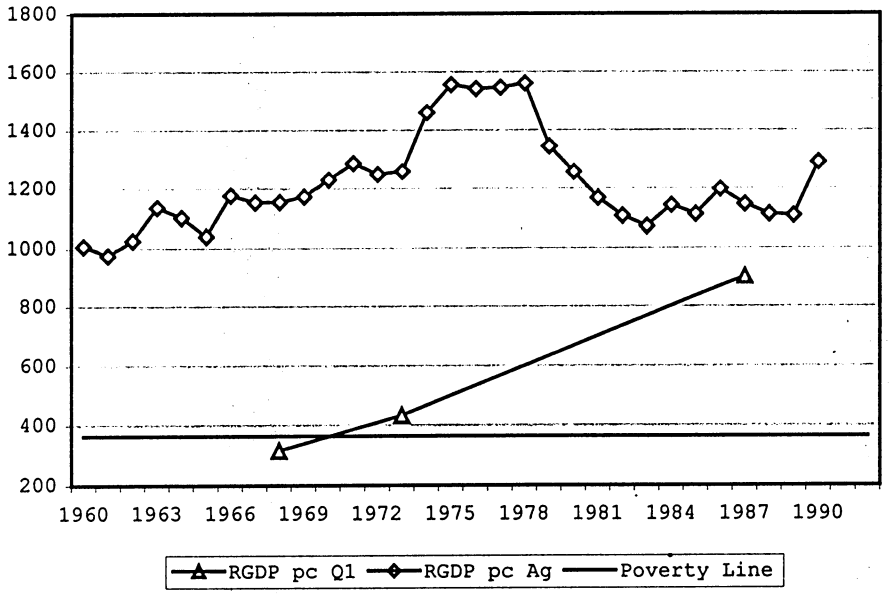

1700
1500
1300
1100
900
700
500
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

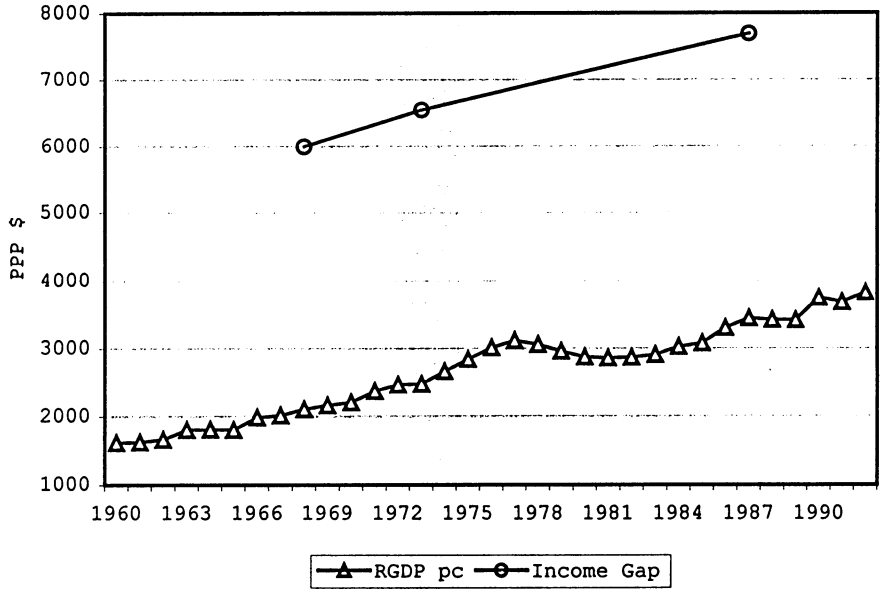

PPP $
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Turkey

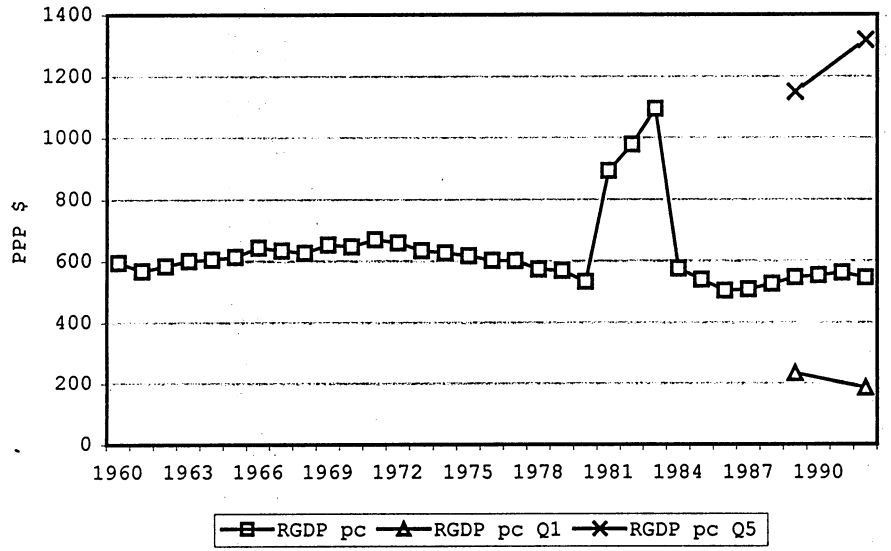

PPP $
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

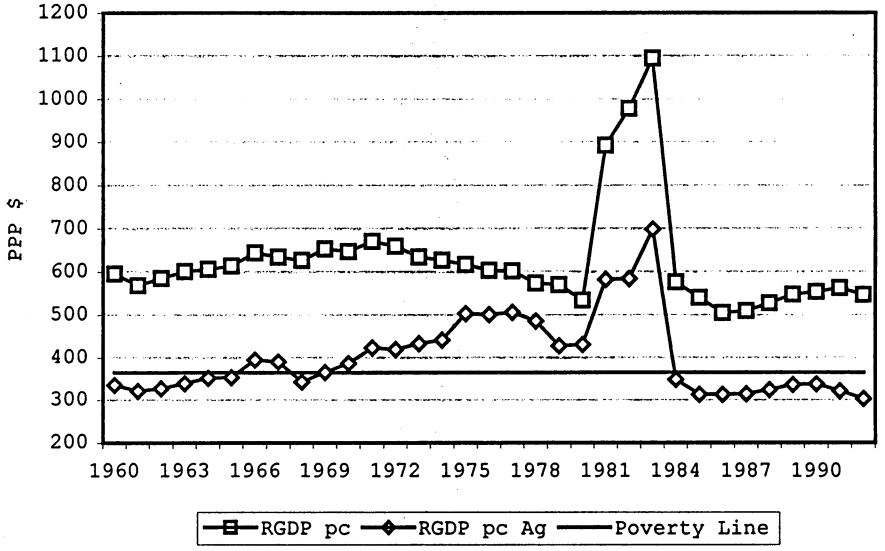

PPP $
4300
3800
3300
2800
2300
1800
1300
800
300
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

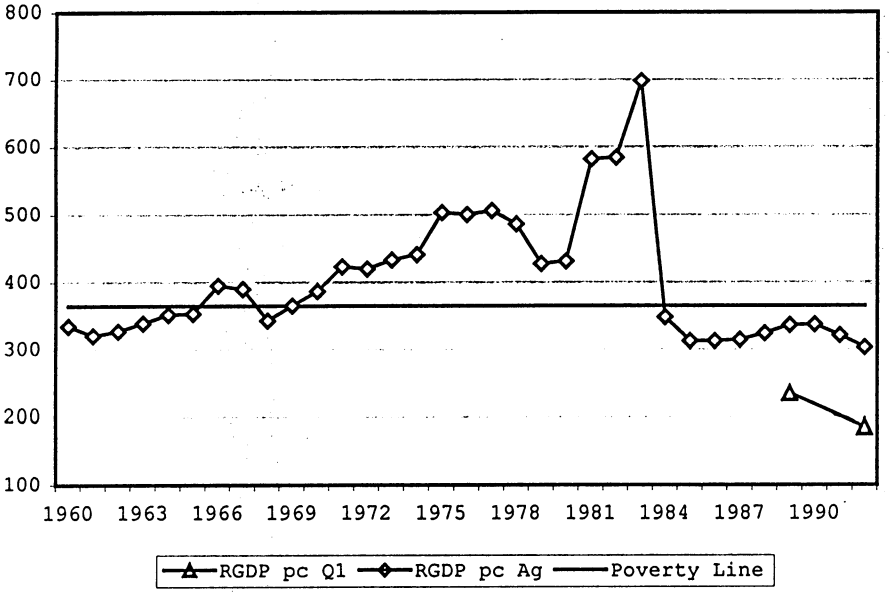

1800
1600
1400
1200
1000
800
600
400
200
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

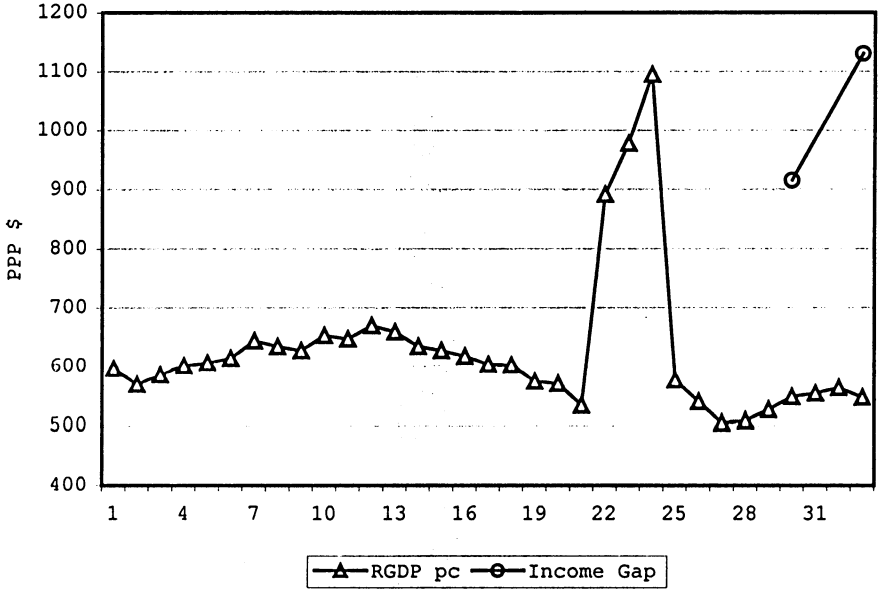

PPP $
8000
7000
6000
5000
4000
3000
2000
1000
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Uganda

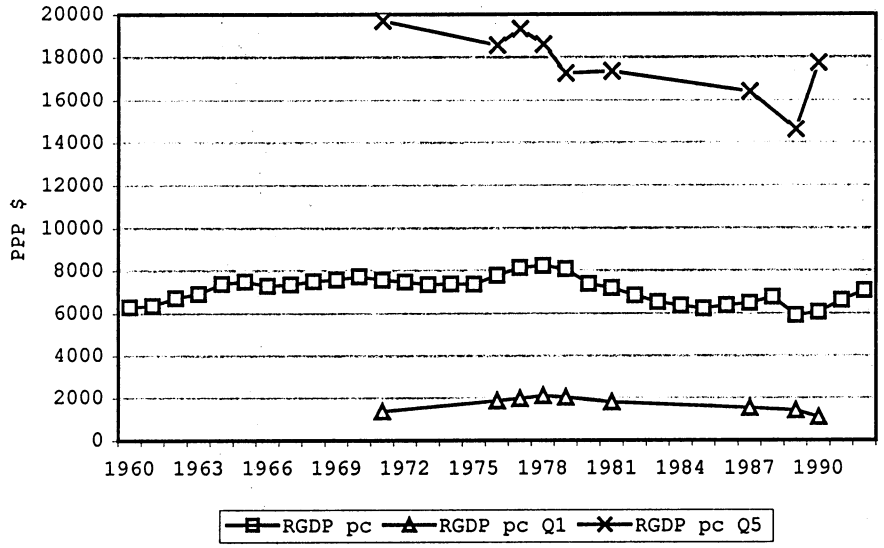

PPP $
1400
1200
1000
800
600
400
200
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

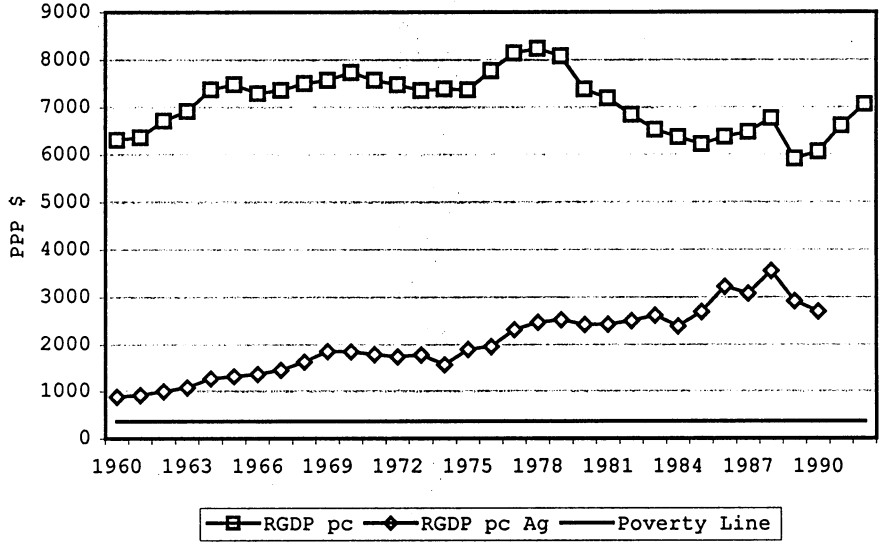

PPP $
1200
1100
1000
900
800
700
600
500
400
300
200
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

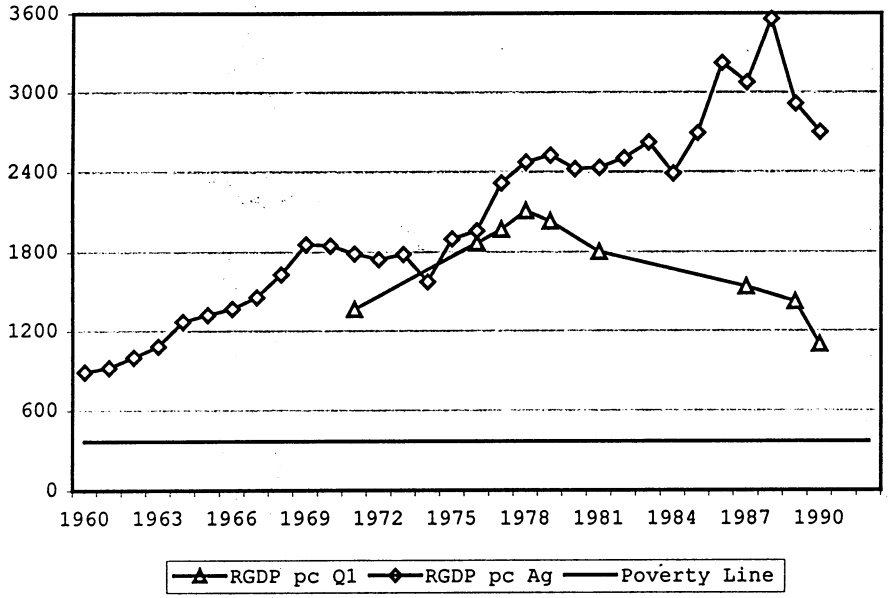

800
700
600
500
400
300
200
100
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

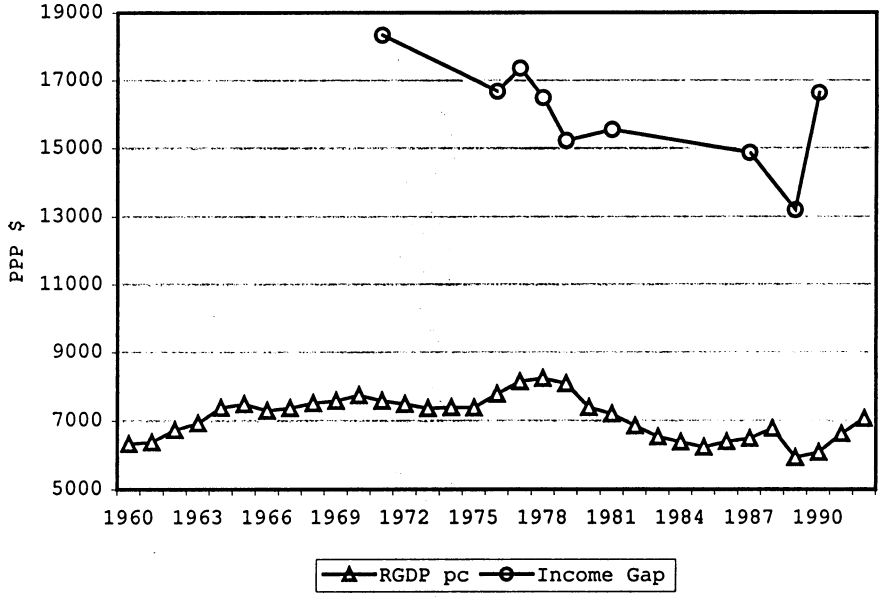

PPP $
1200
1100
1000
900
800
700
600
500
400
1 4 7 10 13 16 19 22 25 28 31
RGDP pc
Income Gap

Venezuela

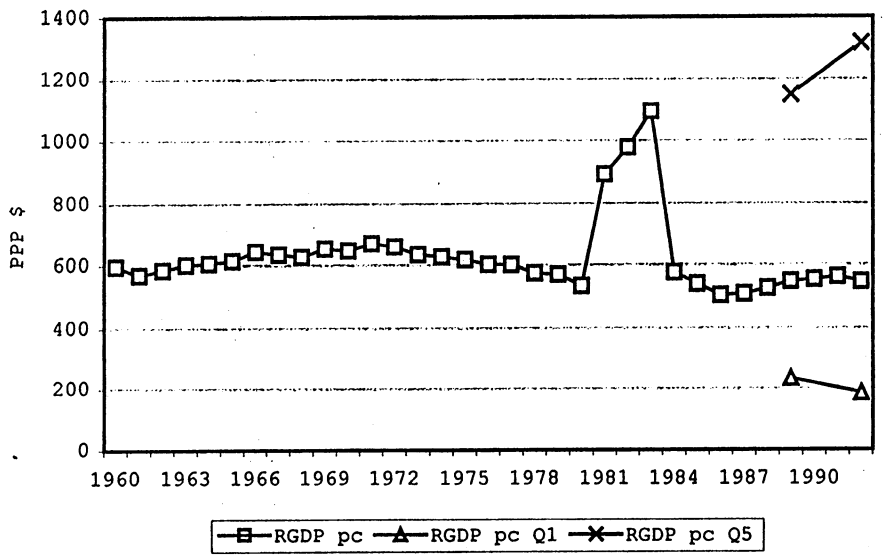

PPP $
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5

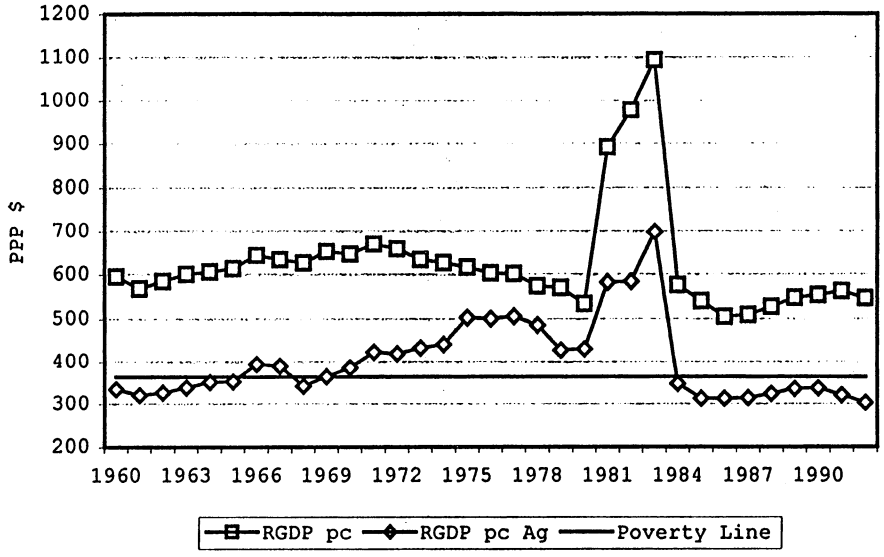

PPP $
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line

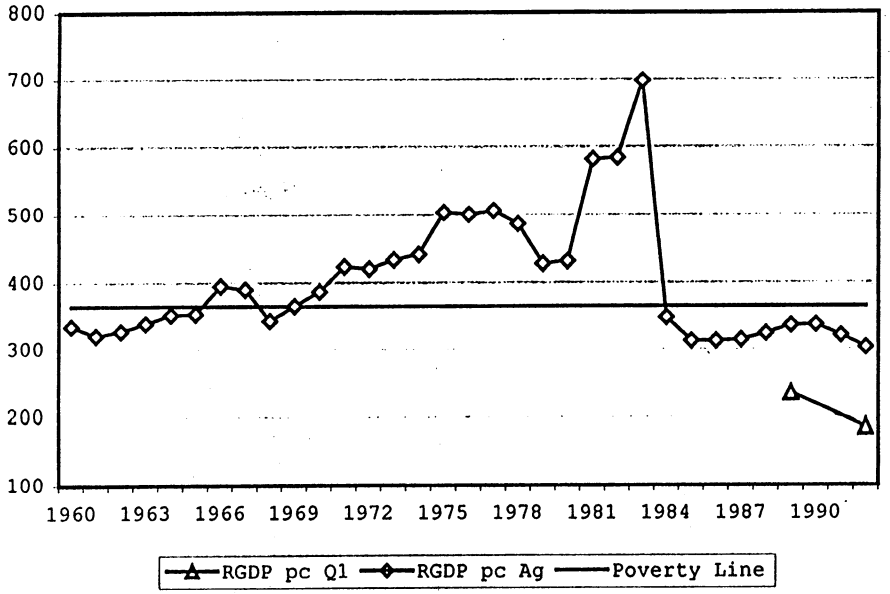

3600
3000
2400
1800
1200
600
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line

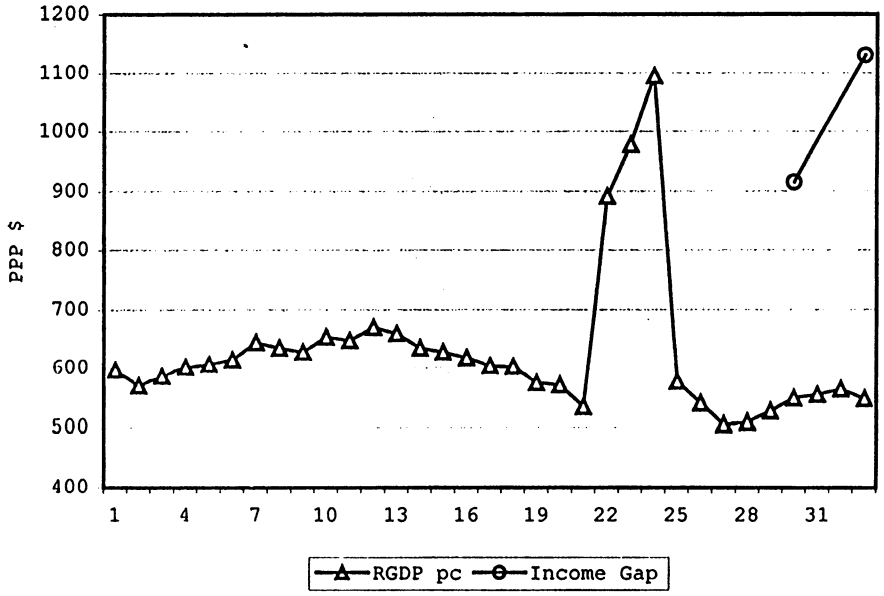

PPP $
19000
17000
15000
13000
11000
9000
7000
5000
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
Income Gap

Uganda


PPP $
1400
1200
1000
800
600
400
200
0
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Q1
RGDP pc Q5


PPP $
1200
1100
1000
900
800
700
600
500
400
300
200
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc
RGDP pc Ag
Poverty Line


800
700
600
500
400
300
200
100
1960 1963 1966 1969 1972 1975 1978 1981 1984 1987 1990
RGDP pc Q1
RGDP pc Ag
Poverty Line


PPP $
1200
1100
1000
900
800
700
600
500
400
1 4 7 10 13 16 19 22 25 28 31
RGDP pc
Income Gap

Appendix C

Details of Quintile-Specific Regressions for Table 2

Dummy Variable	Country Code	Country Name
cdum19	BGD	Bangladesh
cdum28	BRA	Brazil
cdum37	CHL	Chile
cdum38	CHN	China
cdum39	CIV	Ivory Coast
cdum42	COL	Columbia
cdum45	CRI	Costa Rica
cdum56	DOM	Dominican Republic
cdum81	GTM	Guatemala
cdum86	HND	Honduras
cdum90	IDN	Indonesia
cdum92	IND	India
cdum99	JAM	Jamaica
cdum108	KOR	South Korea
cdum116	LKA	Sri Lanka
cdum122	MAR	Morrocco
cdum127	MEX	Mexico
cdum140	MYS	Malaysia
cdum151	OAN	Taiwan
cdum153	PAK	Pakistan
cdum156	PHL	Philippines
cdum188	THA	Thailand
cdum193	TUN	Tunisia
cdum194	TUR	Turkey
cdum196	UGA	Uganda
cdum202	VEN	Venezuela
Not listed	GHA	Ghana

Regression results for Table 2, Panel A (Unconstrained)

```
. *use t:\timmer\dist5.dta,clear;
. *How each Quintile relates to the average;
. *Quintile 1;
. reg lrgdpq1 lrgdpl d60 d70 d80 cdum* if (agdps~=. & sample==1);
```

Source	SS	df	MS
Model	45.0362643	30	1.50120881
Residual	3.71848163	150	.024789878
Total	48.754746	180	.2708597

Number of obs	181
F(30, 150)	60.56
Prob > F	0.0000
R-squared	0.9237
Adj R-squared	0.9085
Root MSE	.15745

lrgdpq1	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lrgdpl	.7901865	.0695965	11.354	0.000	.6526704	.9277027
d60	-.1438455	.0667137	-2.156	0.033	-.2756655	-.0120256
d70	-.1005891	.0523617	-1.921	0.057	-.2040509	.0028727
d80	-.0052783	.0437925	-0.121	0.904	-.091808	.0812514
cdum19	.1233619	.1109614	1.112	0.268	-.0958873	.3426112
cdum28	-.6175898	.1499368	-4.119	0.000	-.9138508	-.3213288
cdum37	-.0769291	.1961772	-0.392	0.696	-.4645567	.3106985
cdum38	.10369	.1046584	0.991	0.323	-.1031051	.310485
cdum39	.0048753	.1280776	0.038	0.970	-.2481938	.2579445
cdum42	-.2482503	.1430371	-1.736	0.085	-.530878	.0343774
cdum45	-.2210952	.1495561	-1.478	0.141	-.5166038	.0744134
cdum56	-.2144657	.1607599	-1.334	0.184	-.5321121	.1031806
cdum81	-.9237018	.1584901	-5.828	0.000	-1.236863	-.6105404
cdum86	-.9212092	.1523583	-6.046	0.000	-1.222255	-.6201636
cdum90	.2359812	.1164781	2.026	0.045	.0058315	.4661308
cdum92	.2705922	.1017844	2.658	0.009	.0694759	.4717085
cdum99	-.0781711	.139643	-0.560	0.576	-.3540925	.1977502
cdum108	.2058347	.1341824	1.534	0.127	-.0592971	.4709664
cdum116	.0398344	.1200159	0.332	0.740	-.1973057	.2769745
cdum122	.0842058	.1558673	0.540	0.590	-.2237733	.3921849
cdum127	-.4041796	.1766324	-2.288	0.024	-.7531885	-.0551707
cdum140	-.2671737	.1587171	-1.683	0.094	-.5807837	.0464364
cdum151	.5209498	.1487273	3.503	0.001	.2270787	.8148209
cdum153	.2898413	.1107011	2.618	0.010	.0711064	.5085762
cdum188	-.2001343	.1321144	-1.515	0.132	-.4611799	.0609113
cdum193	.0058635	.1623769	0.036	0.971	-.3149779	.326705
cdum194	-.3333275	.1627519	-2.048	0.042	-.6549099	-.011745
cdum196	-.0498295	.1475694	-0.338	0.736	-.3414127	.2417538
cdum202	.0393922	.191116	0.206	0.837	-.3382349	.4170193
cdum156	-.3513253	.1286995	-2.730	0.007	-.6056235	-.0970272
_cons	.407883	.4846115	0.842	0.401	-.5496634	1.36543

```
. *Quintile 2;
. reg lrgdpq2 lrgdpl d60 d70 d80 cdum* if (agdps~=. & sample==1);

  Source |       SS       df       MS              .   Number of obs =     181
---------+------------------------------              F( 30,   150) =  171.50
   Model |  52.8087583     30  1.76029194              Prob > F      =  0.0000
Residual |  1.53963134    150  .010264209             R-squared     =  0.9717
---------+------------------------------              Adj R-squared =  0.9660
   Total |  54.3483897    180  .301935498             Root MSE      =  .10131

------------------------------------------------------------------------------
 lrgdpq2 |      Coef.   Std. Err.       t     P>|t|       [95% Conf. Interval]
---------+--------------------------------------------------------------------

  lrgdpl |   .9480104    .044783     21.169   0.000       .8595234    1.036497
     d60 |  -.0566724    .042928     -1.320   0.189       -.141494    .0281493
     d70 |  -.0223252    .033693     -0.663   0.509      -.0888993    .0442489
     d80 |   .0241151   .0281789      0.856   0.393      -.0315638     .079794
  cdum19 |   .0464727   .0713999      0.651   0.516      -.0946067    .1875522
  cdum28 |  -.6066241   .0964793     -6.288   0.000      -.7972579   -.4159902
  cdum37 |  -.1375517   .1262333     -1.090   0.278      -.3869768    .1118734
  cdum38 |   .0597709   .0673441      0.888   0.376      -.0732947    .1928365
  cdum39 |  -.0754893   .0824135     -0.916   0.361      -.2383307    .0873521
  cdum42 |   -.311082   .0920395     -3.380   0.001      -.4929433   -.1292207
  cdum45 |  -.1920777   .0962342     -1.996   0.048      -.3822274   -.0019279
  cdum56 |  -.2581446   .1034435     -2.496   0.014      -.4625392     -.05375
  cdum81 |  -.6167137    .101983     -6.047   0.000      -.8182224    -.415205
  cdum86 |  -.5671593   .0980374     -5.785   0.000      -.7608719   -.3734467
  cdum90 |   .0633129   .0749497      0.845   0.400      -.0847806    .2114063
  cdum92 |   .1279041   .0654948      1.953   0.053      -.0015074    .2573156
  cdum99 |  -.1184772   .0898555     -1.319   0.189      -.2960232    .0590688
 cdum108 |   .1321905   .0863418      1.531   0.128      -.0384127    .3027938
 cdum116 |   .0133878   .0772262      0.173   0.863      -.1392038    .1659794
 cdum122 |  -.0297118   .1002953     -0.296   0.767      -.2278858    .1684623
 cdum127 |  -.4942868   .1136569     -4.349   0.000      -.7188622   -.2697115
 cdum140 |  -.2695813   .1021291     -2.640   0.009      -.4713786   -.0677839
 cdum151 |   .2419283    .095701      2.528   0.013       .0528323    .4310244
 cdum153 |   .1203237   .0712324      1.689   0.093      -.0204248    .2610721
 cdum188 |  -.1988542   .0850111     -2.339   0.021      -.3668281   -.0308803
 cdum193 |  -.0466856    .104484     -0.447   0.656      -.2531361    .1597649
 cdum194 |  -.2665262   .1047253     -2.545   0.012      -.4734536   -.0595989
 cdum196 |  -.0615081   .0949559     -0.648   0.518       -.249132    .1261158
 cdum202 |  -.0846483   .1229766     -0.688   0.492      -.3276385    .1583419
 cdum156 |  -.1758541   .0828138     -2.123   0.035      -.3394863    -.012222
   _cons |  -.2057217    .311831     -0.660   0.510      -.8218702    .4104269
------------------------------------------------------------------------------
```

```
. *Quintile 3;
. reg lrgdpq3 lrgdpl d60 d70 d80 cdum* if (agdps~=. & sample==1);

  Source |       SS       df       MS              Number of obs =     181
---------+------------------------------           F( 30,   150) =  311.31
   Model |  60.6438454     30  2.02146151           Prob > F      =  0.0000
Residual |  .974014443    150   .00649343           R-squared     =  0.9842
---------+------------------------------           Adj R-squared =  0.9810
   Total |  61.6178598    180  .342321443           Root MSE      =  .08058

------------------------------------------------------------------------------
 lrgdpq3 |      Coef.   Std. Err.       t     P>|t|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
  lrgdpl |   .9753927   .0356195     27.384   0.000       .9050121    1.045773
     d60 |  -.0521288    .034144     -1.527   0.129      -.1195941    .0153366
     d70 |   .0074614   .0267987      0.278   0.781      -.0454903    .0604131
     d80 |   .0346018    .022413      1.544   0.125      -.0096841    .0788877
  cdum19 |   .0108997     .05679      0.192   0.848      -.1013119    .1231114
  cdum28 |   -.388894   .0767376     -5.068   0.000      -.5405202   -.2372677
  cdum37 |  -.0772231   .1004034     -0.769   0.443      -.2756107    .1211645
  cdum38 |   .0414406   .0535641      0.774   0.440       -.064397    .1472783
  cdum39 |  -.0555868     .06555     -0.848   0.398      -.1851075    .0739338
  cdum42 |  -.2588213   .0732063     -3.536   0.001      -.4034701   -.1141726
  cdum45 |  -.1501688   .0765427     -1.962   0.052      -.3014099    .0010724
  cdum56 |  -.1771719   .0822768     -2.153   0.033      -.3397432   -.0146007
  cdum81 |  -.4006423   .0811152     -4.939   0.000      -.5609181   -.2403664
  cdum86 |  -.3317598   .0779769     -4.255   0.000      -.4858348   -.1776848
  cdum90 |  -.0098565   .0596134     -0.165   0.869       -.127647    .1079339
  cdum92 |   .0719331   .0520932      1.381   0.169      -.0309981    .1748644
  cdum99 |  -.0640041   .0714692     -0.896   0.372      -.2052206    .0772123
 cdum108 |   .0649495   .0686745      0.946   0.346      -.0707448    .2006438
 cdum116 |  -.0350951   .0614241     -0.571   0.569      -.1564633    .0862731
 cdum122 |  -.0274759   .0797728     -0.344   0.731      -.1850994    .1301477
 cdum127 |  -.3073112   .0904004     -3.399   0.001      -.4859338   -.1286886
 cdum140 |  -.2041243   .0812314     -2.513   0.013      -.3646298   -.0436189
 cdum151 |   .1276305   .0761186      1.677   0.096      -.0227726    .2780336
 cdum153 |   .0504881   .0566568      0.891   0.374      -.0614604    .1624365
 cdum188 |  -.1546132   .0676161     -2.287   0.024      -.2882162   -.0210102
 cdum193 |   .0066827   .0831044      0.080   0.936      -.1575238    .1708891
 cdum194 |  -.2277722   .0832964     -2.734   0.007      -.3923579   -.0631865
 cdum196 |  -.0598902    .075526     -0.793   0.429      -.2091223     .089342
 cdum202 |  -.0353571   .0978131     -0.361   0.718      -.2286264    .1579123
 cdum156 |  -.2644339   .0658684     -4.015   0.000      -.3945836   -.1342843
   _cons |  -.0804061    .248024     -0.324   0.746      -.5704779    .4096658
------------------------------------------------------------------------------
```

```
. *Quintile 4;
. reg lrgdpq4 lrgdpl d60 d70 d80 cdum* if (agdps~=. & sample==1);

  Source |       SS       df       MS              Number of obs =     181
---------+------------------------------           F( 30,   150) =   59.60
   Model |   68.600017     30  2.28666723           Prob > F      =  0.0000
Residual |  5.75505381    150  .038367025           R-squared     =  0.9226
---------+------------------------------           Adj R-squared =  0.9071
   Total |  74.3550708    180  .413083727           Root MSE      =  .19588

------------------------------------------------------------------------------
 lrgdpq4 |      Coef.   Std. Err.       t     P>|t|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
  lrgdpl |   .9962121   .0865824     11.506   0.000       .8251336    1.167291
     d60 |  -.0831433   .0829959     -1.002   0.318      -.2471354    .0808488
     d70 |    .016453   .0651412      0.253   0.801      -.1122598    .1451658
     d80 |   .0282199   .0544805      0.518   0.605      -.0794284    .1358682
  cdum19 |   .0200682   .1380428      0.145   0.885      -.2526914    .2928278
  cdum28 |  -.1697694   .1865307     -0.910   0.364      -.5383363    .1987976
  cdum37 |   .0254953   .2440565      0.104   0.917      -.4567372    .5077279
  cdum38 |   .1470192   .1302015      1.129   0.261      -.1102466     .404285
  cdum39 |  -.0186071   .1593364     -0.117   0.907      -.3334407    .2962265
  cdum42 |  -.1403618   .1779469     -0.789   0.431       -.491968    .2112445
  cdum45 |  -.3663445    .186057     -1.969   0.051      -.7339755    .0012864
  cdum56 |  -.0251875   .1999952     -0.126   0.900      -.4203591    .3699841
  cdum81 |  -.1798635   .1971715     -0.912   0.363      -.5694557    .2097286
  cdum86 |  -.0710864   .1895431     -0.375   0.708      -.4456057    .3034329
  cdum90 |  -.0072773   .1449059     -0.050   0.960      -.2935976    .2790431
  cdum92 |   .0390157   .1266261      0.308   0.758      -.2111854    .2892168
  cdum99 |   .0001623   .1737245      0.001   0.999      -.3431009    .3434255
 cdum108 |   .0659243   .1669312      0.395   0.693       -.263916    .3957645
 cdum116 |  -.0451061   .1493072     -0.302   0.763      -.3401229    .2499108
 cdum122 |  -.0196163   .1939086     -0.101   0.920      -.4027612    .3635287
 cdum127 |  -.1228394   .2197416     -0.559   0.577       -.557028    .3113491
 cdum140 |  -.0821156   .1974539     -0.416   0.678      -.4722658    .3080346
 cdum151 |    .058192    .185026      0.315   0.754      -.3074018    .4237858
 cdum153 |  -.0015608    .137719     -0.011   0.991      -.2736804    .2705589
 cdum188 |  -.0307492   .1643585     -0.187   0.852      -.3555059    .2940076
 cdum193 |   .0358865   .2020069      0.178   0.859         -.36326     .435033
 cdum194 |  -.0443868   .2024734     -0.219   0.827      -.4444551    .3556816
 cdum196 |  -.0411226   .1835855     -0.224   0.823      -.4038701    .3216249
 cdum202 |    .021022   .2377601      0.088   0.930      -.4487694    .4908133
 cdum156 |  -.0465005   .1601102     -0.290   0.772       -.362863     .269862
   _cons |   .0972159   .6028866      0.161   0.872      -1.094031    1.288463
------------------------------------------------------------------------------
```

```
. *Quintile 5;
. reg lrgdpq5 lrgdpl d60 d70 d80 cdum* if (agdps~=. & sample==1);
```

Source	SS	df	MS		
Model	97.7338173	30	3.25779391	Number of obs	181
Residual	.598487888	150	.003989919	F(30, 150)	816.51
				Prob > F	0.0000
				R-squared	0.9939
				Adj R-squared	0.9927
Total	98.3323052	180	.546290585	Root MSE	.06317

lrgdpq5	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lrgdpl	1.023764	.0279211	36.666	0.000	.9685945	1.078933
d60	.0321268	.0267645	1.200	0.232	-.0207574	.085011
d70	-.001445	.0210067	-0.069	0.945	-.0429523	.0400623
d80	-.0184832	.0175689	-1.052	0.294	-.0531976	.0162313
cdum19	-.0197164	.0445161	-0.443	0.658	-.1076759	.0682432
cdum28	.3315555	.0601524	5.512	0.000	.2126999	.450411
cdum37	.1205475	.0787034	1.532	0.128	-.034963	.2760579
cdum38	-.1344015	.0419874	-3.201	0.002	-.2173646	-.0514384
cdum39	.0595017	.0513828	1.158	0.249	-.0420259	.1610293
cdum42	.2405282	.0573844	4.192	0.000	.1271422	.3539143
cdum45	.1903046	.0599997	3.172	0.002	.0717509	.3088583
cdum56	.1608824	.0644945	2.495	0.014	.0334474	.2883174
cdum81	.3551421	.0635839	5.585	0.000	.2295063	.4807778
cdum86	.3015776	.0611239	4.934	0.000	.1808025	.4223526
cdum90	-.0286341	.0467293	-0.613	0.541	-.1209667	.0636985
cdum92	-.0911146	.0408344	-2.231	0.027	-.1717994	-.0104297
cdum99	.0920534	.0560227	1.643	0.102	-.0186422	.202749
cdum108	-.0662856	.053832	-1.231	0.220	-.1726525	.0400813
cdum116	.0396246	.0481486	0.823	0.412	-.0555125	.1347617
cdum122	.0440607	.0625317	0.705	0.482	-.0794959	.1676174
cdum127	.280414	.0708623	3.957	0.000	.1403968	.4204312
cdum140	.2092985	.063675	3.287	0.001	.0834828	.3351142
cdum151	-.1675132	.0596672	-2.807	0.006	-.2854099	-.0496164
cdum153	-.0785293	.0444116	-1.768	0.079	-.1662825	.0092239
cdum188	.1588159	.0530023	2.996	0.003	.0540883	.2635435
cdum193	.0511555	.0651432	0.785	0.434	-.0775613	.1798723
cdum194	.2047917	.0652937	3.136	0.002	.0757776	.3338058
cdum196	.0470905	.0592027	0.795	0.428	-.0698884	.1640693
cdum202	.0685218	.0766729	0.894	0.373	-.0829766	.2200202
cdum156	.1979983	.0516323	3.835	0.000	.0959776	.3000189
_cons	.6215321	.194419	3.197	0.002	.2373786	1.005686

Regression results for Table 2, Panel B (Constrained System Estimation)

System: GDP2

	Coefficien	Std. Error	t-Statisti	Prob.
Quintile 1				
Constant	0.3430	0.3523	0.9735	0.3306
Log Avg Y	0.7997	0.0506	15.8162	0.0000
d60	-0.1377	0.0489	-2.8152	0.0050
d70	-0.0974	0.0386	-2.5252	0.0117
d80	-0.0043	0.0323	-0.1324	0.8947
C(10)	0.1191	0.0819	1.4545	0.1462
C(11)	-0.6327	0.1098	-5.7638	0.0000
C(12)	-0.0948	0.1439	-0.6587	0.5103
C(13)	0.1003	0.0773	1.2984	0.1945
C(14)	-0.0008	0.0945	-0.0087	0.9931
C(15)	-0.2606	0.1050	-2.4823	0.0132
C(16)	-0.2350	0.1097	-2.1428	0.0324
C(17)	-0.2241	0.1184	-1.8927	0.0587
C(18)	-0.9326	0.1168	-7.9862	0.0000
C(19)	-0.9275	0.1124	-8.2507	0.0000
C(20)	0.2304	0.0859	2.6828	0.0074
C(21)	0.2672	0.0751	3.5569	0.0004
C(22)	-0.0890	0.1026	-0.8667	0.3863
C(23)	0.1943	0.0985	1.9729	0.0488
C(24)	0.0326	0.0884	0.3684	0.7127
C(25)	0.0760	0.1149	0.6617	0.5083
C(26)	-0.4227	0.1292	-3.2711	0.0011
C(27)	-0.2819	0.1164	-2.4219	0.0156
C(28)	0.5065	0.1090	4.6481	0.0000
C(29)	0.2854	0.0817	3.4942	0.0005
C(30)	-0.2107	0.0971	-2.1707	0.0302
C(31)	-0.0040	0.1196	-0.0337	0.9731
C(32)	-0.3467	0.1195	-2.9003	0.0038
C(33)	-0.0454	0.1090	-0.4164	0.6772
C(34)	0.0177	0.1396	0.1268	0.8991
C(151)	-0.3588	0.0948	-3.7837	0.0002
Quintile 2				
Constant	-0.2924	0.3464	-0.8441	0.3988
Log Avg Y	0.9607	0.0497	19.3387	0.0000
d60	-0.0485	0.0486	-0.9993	0.3179
d70	-0.0180	0.0384	-0.4693	0.6390
d80	0.0254	0.0323	0.7871	0.4314
C(39)	0.0408	0.0818	0.4986	0.6181
C(40)	-0.6268	0.1087	-5.7640	0.0000
C(41)	-0.1614	0.1428	-1.1300	0.2588
C(42)	0.0553	0.0772	0.7159	0.4742
C(43)	-0.0831	0.0943	-0.8811	0.3785
C(44)	-0.3276	0.1043	-3.1416	0.0017
C(45)	-0.2106	0.1088	-1.9358	0.0532
C(46)	-0.2710	0.1180	-2.2964	0.0219
C(47)	-0.6286	0.1164	-5.3984	0.0000
C(48)	-0.5755	0.1122	-5.1274	0.0000
C(49)	0.0559	0.0857	0.6522	0.5144
C(50)	0.1234	0.0751	1.6445	0.1004
C(51)	-0.1329	0.1021	-1.3016	0.1934
C(52)	0.1168	0.0978	1.1942	0.2327
C(53)	0.0037	0.0881	0.0418	0.9667
C(54)	-0.0406	0.1146	-0.3545	0.7230
C(55)	-0.5190	0.1279	-4.0575	0.0001
C(56)	-0.2892	0.1155	-2.5044	0.0124
C(57)	0.2226	0.1080	2.0608	0.0396
C(58)	0.1144	0.0816	1.4026	0.1611
C(59)	-0.2130	0.0965	-2.2068	0.0276

	Coefficien	Std. Error	t-Statisti	Prob.
C(60)	-0.0599	0.1192	-0.5025	0.6154
C(61)	-0.2844	0.1188	-2.3935	0.0169
C(62)	-0.0556	0.1089	-0.5103	0.6100
C(63)	-0.1136	0.1379	-0.8236	0.4104
C(152)	-0.1858	0.0945	-1.9652	0.0497
Quinitle 3				
Constant	-0.1788	0.3402	-0.5255	0.5994
Log Avg Y	0.9898	0.0487	20.3039	0.0000
d60	-0.0429	0.0482	-0.8902	0.3736
d70	0.0123	0.0383	0.3221	0.7475
d80	0.0361	0.0323	1.1176	0.2640
C(68)	0.0044	0.0817	0.0543	0.9567
C(69)	-0.4118	0.1077	-3.8246	0.0001
C(70)	-0.1043	0.1417	-0.7359	0.4620
C(71)	0.0363	0.0771	0.4710	0.6377
C(72)	-0.0642	0.0941	-0.6822	0.4953
C(73)	-0.2775	0.1035	-2.6808	0.0075
C(74)	-0.1712	0.1079	-1.5866	0.1129
C(75)	-0.1918	0.1176	-1.6305	0.1033
C(76)	-0.4141	0.1161	-3.5672	0.0004
C(77)	-0.3412	0.1121	-3.0449	0.0024
C(78)	-0.0183	0.0855	-0.2136	0.8309
C(79)	0.0669	0.0750	0.8917	0.3728
C(80)	-0.0803	0.1015	-0.7915	0.4289
C(81)	0.0475	0.0971	0.4891	0.6249
C(82)	-0.0461	0.0878	-0.5252	0.5996
C(83)	-0.0399	0.1143	-0.3488	0.7273
C(84)	-0.3354	0.1266	-2.6502	0.0082
C(85)	-0.2264	0.1145	-1.9766	0.0484
C(86)	0.1057	0.1070	0.9875	0.3236
C(87)	0.0438	0.0814	0.5374	0.5911
C(88)	-0.1706	0.0959	-1.7788	0.0756
C(89)	-0.0083	0.1188	-0.0699	0.9443
C(90)	-0.2480	0.1180	-2.1010	0.0359
C(91)	-0.0531	0.1088	-0.4885	0.6253
C(92)	-0.0682	0.1362	-0.5009	0.6166
C(153)	-0.2757	0.0942	-2.9255	0.0035
Quinitle 4				
Constant	-0.0110	0.3253	-0.0337	0.9731
Log Avg Y	1.0121	0.0465	21.7582	0.0000
d60	-0.0730	0.0472	-1.5446	0.1228
d70	0.0218	0.0380	0.5744	0.5658
d80	0.0299	0.0323	0.9258	0.3548
C(97)	0.0130	0.0814	0.1592	0.8736
C(98)	-0.1950	0.1051	-1.8546	0.0640
C(99)	-0.0042	0.1390	-0.0304	0.9757
C(100)	0.1414	0.0769	1.8377	0.0664
C(101)	-0.0281	0.0937	-0.2997	0.7644
C(102)	-0.1610	0.1018	-1.5814	0.1141
C(103)	-0.3895	0.1058	-3.6821	0.0002
C(104)	-0.0413	0.1167	-0.3535	0.7238
C(105)	-0.1947	0.1153	-1.6889	0.0916
C(106)	-0.0815	0.1117	-0.7298	0.4657
C(107)	-0.0165	0.0851	-0.1942	0.8461
C(108)	0.0334	0.0748	0.4471	0.6549
C(109)	-0.0178	0.1001	-0.1777	0.8590
C(110)	0.0468	0.0955	0.4894	0.6247
C(111)	-0.0572	0.0871	-0.6571	0.5113
C(112)	-0.0332	0.1136	-0.2926	0.7699
C(113)	-0.1537	0.1233	-1.2465	0.2129

	Coefficien	Std. Error	t-Statisti	Prob.
C(114)	-0.1066	0.1123	-0.9492	0.3428
C(115)	0.0341	0.1047	0.3254	0.7450
C(116)	-0.0090	0.0812	-0.1103	0.9122
C(117)	-0.0483	0.0945	-0.5114	0.6092
C(118)	0.0194	0.1178	0.1647	0.8692
C(119)	-0.0666	0.1162	-0.5733	0.5666
C(120)	-0.0337	0.1086	-0.3103	0.7564
C(121)	-0.0151	0.1321	-0.1145	0.9089
C(154)	-0.0589	0.0935	-0.6294	0.5293
Quintile 5				
Constant	0.5879	0.1953	3.0098	0.0027
Log Avg Y	1.0287	0.0267	38.5534	0.0000
d60	0.0353	0.0404	0.8737	0.3825
d70	0.0002	0.0357	0.0063	0.9950
d80	-0.0180	0.0320	-0.5609	0.5750
C(126)	-0.0219	0.0796	-0.2756	0.7829
C(127)	0.3237	0.0859	3.7691	0.0002
C(128)	0.1113	0.1192	0.9336	0.3508
C(129)	-0.1362	0.0757	-1.7977	0.0726
C(130)	0.0565	0.0909	0.6221	0.5340
C(131)	0.2341	0.0889	2.6327	0.0086
C(132)	0.1831	0.0900	2.0348	0.0422
C(133)	0.1559	0.1101	1.4157	0.1572
C(134)	0.3505	0.1096	3.1975	0.0014
C(135)	0.2983	0.1088	2.7417	0.0062
C(136)	-0.0315	0.0822	-0.3836	0.7014
C(137)	-0.0928	0.0736	-1.2615	0.2075
C(138)	0.0865	0.0904	0.9569	0.3389
C(139)	-0.0723	0.0837	-0.8636	0.3880
C(140)	0.0359	0.0821	0.4369	0.6623
C(141)	0.0398	0.1088	0.3660	0.7144
C(142)	0.2708	0.0985	2.7504	0.0061
C(143)	0.2017	0.0957	2.1086	0.0352
C(144)	-0.1750	0.0872	-2.0080	0.0449
C(145)	-0.0808	0.0792	-1.0208	0.3076
C(146)	0.1533	0.0845	1.8138	0.0700
C(147)	0.0460	0.1109	0.4149	0.6783
C(148)	0.1979	0.1032	1.9173	0.0555
C(149)	0.0494	0.1071	0.4614	0.6446
C(150)	0.0573	0.0994	0.5759	0.5648
C(155)	0.1941	0.0887	2.1891	0.0288

Determinant residual 2.39E-16

```
Equation: LRGDPQ1=C(1) + C(2)*LRGDPL + C(7)*D60 + C(8)*D70 +
        C(9)*D80 + C(10)*CDUM19 + C(11)*CDUM28 + C(12)*CDUM37 +
        C(13)*CDUM38 + C(14)*CDUM39 + C(15)*CDUM42 +
        C(16)*CDUM45 + C(17)*CDUM56 + C(18)*CDUM81 +
        C(19)*CDUM86 + C(20)*CDUM90 + C(21)*CDUM92 +
        C(22)*CDUM99 + C(23)*CDUM108 + C(24)*CDUM116 +
        C(25)*CDUM122 + C(26)*CDUM127 + C(27)*CDUM140 +
        C(28)*CDUM151 + C(29)*CDUM153 + C(30)*CDUM188 +
        C(31)*CDUM193 + C(32)*CDUM194 + C(33)*CDUM196 +
        C(34)*CDUM202 +C(151)*CDUM156
Observations: 181
```

R-squared	0.923721	Mean dependent v	6.315036
Adjusted R	0.908466	S.D. dependent v	0.520442
S.E. of re	0.157458	Sum squared resi	3.718947
Durbin-Wat	1.815582		

```
          Coefficien Std. Error t-Statisti Prob.
-------------------------------------------------------------
Equation: LRGDPQ2=C(35) + C(3)*LRGDPL + C(36)*D60 + C(37)*D70 +
        C(38)*D80 + C(39)*CDUM19 + C(40)*CDUM28 + C(41)*CDUM37 +
        C(42)*CDUM38 + C(43)*CDUM39 + C(44)*CDUM42 +
        C(45)*CDUM45 + C(46)*CDUM56 + C(47)*CDUM81 +
        C(48)*CDUM86 + C(49)*CDUM90 + C(50)*CDUM92 +
        C(51)*CDUM99 + C(52)*CDUM108 + C(53)*CDUM116 +
        C(54)*CDUM122 + C(55)*CDUM127 + C(56)*CDUM140 +
        C(57)*CDUM151 + C(58)*CDUM153 + C(59)*CDUM188 +
        C(60)*CDUM193 + C(61)*CDUM194 + C(62)*CDUM196 +
        C(63)*CDUM202 +C(152)*CDUM156
Observations: 181

R-squared    0.971656     Mean dependent v    6.882005
Adjusted R   0.965987     S.D. dependent v    0.549487
S.E. of re    0.10134     Sum squared resi    1.540456
Durbin-Wat   1.941681
-------------------------------------------------------------
Equation: LRGDPQ3=C(64) + C(4)*LRGDPL + C(65)*D60 + C(66)*D70 +
        C(67)*D80 + C(68)*CDUM19 + C(69)*CDUM28 + C(70)*CDUM37 +
        C(71)*CDUM38 + C(72)*CDUM39 + C(73)*CDUM42 +
        C(74)*CDUM45 + C(75)*CDUM56 + C(76)*CDUM81 +
        C(77)*CDUM86 + C(78)*CDUM90 + C(79)*CDUM92 +
        C(80)*CDUM99 + C(81)*CDUM108 + C(82)*CDUM116 +
        C(83)*CDUM122 + C(84)*CDUM127 + C(85)*CDUM140 +
        C(86)*CDUM151 + C(87)*CDUM153 + C(88)*CDUM188 +
        C(89)*CDUM193 + C(90)*CDUM194 + C(91)*CDUM196 +
        C(92)*CDUM202 +C(153)*CDUM156
Observations: 181

R-squared    0.984175     Mean dependent v    7.240112
Adjusted R    0.98101     S.D. dependent v    0.585082
S.E. of re   0.080626     Sum squared resi    0.975077
Durbin-Wat   1.979314
-------------------------------------------------------------
Equation: LRGDPQ4=C(93) + C(5)*LRGDPL  + C(94)*D60 + C(95)*D70
        + C(96)*D80 + C(97)*CDUM19 + C(98)*CDUM28 + C(99)*CDUM37
        + C(100)*CDUM38 + C(101)*CDUM39 + C(102)*CDUM42 +
        C(103)*CDUM45 + C(104)*CDUM56 + C(105)*CDUM81 +
        C(106)*CDUM86 + C(107)*CDUM90 + C(108)*CDUM92 +
        C(109)*CDUM99 + C(110)*CDUM108 + C(111)*CDUM116 +
        C(112)*CDUM122 + C(113)*CDUM127 + C(114)*CDUM140 +
        C(115)*CDUM151 + C(116)*CDUM153 + C(117)*CDUM188 +
        C(118)*CDUM193 + C(119)*CDUM194 + C(120)*CDUM196 +
        C(121)*CDUM202 +C(154)*CDUM156
Observations: 181

R-squared    0.922583     Mean dependent v     7.61826
Adjusted R     0.9071     S.D. dependent v    0.642716
S.E. of re   0.195897     Sum squared resi    5.756339
Durbin-Wat   2.038583
-------------------------------------------------------------
Equation: LRGDPQ5=C(122) + C(6)*LRGDPL  + C(123)*D60 +
        C(124)*D70 + C(125)*D80 + C(126)*CDUM19 + C(127)*CDUM28 +
        C(128)*CDUM37 + C(129)*CDUM38 + C(130)*CDUM39 +
        C(131)*CDUM42 + C(132)*CDUM45 + C(133)*CDUM56 +
        C(134)*CDUM81 + C(135)*CDUM86 + C(136)*CDUM90 +
        C(137)*CDUM92 + C(138)*CDUM99 + C(139)*CDUM108 +
        C(140)*CDUM116 + C(141)*CDUM122 + C(142)*CDUM127 +
        C(143)*CDUM140 + C(144)*CDUM151 + C(145)*CDUM153 +
```

```
          Coefficien Std. Error t-Statisti Prob.
        C(146)*CDUM188 + C(147)*CDUM193 + C(148)*CDUM194 +
        C(149)*CDUM196 + C(150)*CDUM202 +C(155)*CDUM156
Observations: 181

R-squared     0.993912     Mean dependent v    8.427389
Adjusted R    0.992695     S.D. dependent v    0.739115
S.E. of re    0.063172     Sum squared resi    0.598613
Durbin-Wat     1.96835
------------------------------------------------------------------
Equation: QUNTILE1*C(2)+(QUNTILE2-QUNTILE1)*C(3)
        +(QUNTILE3-QUNTILE2)*C(4)+(QUNTILE4-QUNTILE3)*C(5)
        +(1-QUNTILE4)*C(6)=1
Observations: 181
------------------------------------------------------------------
S.E. of re    0.008031     Sum squared resi    0.011352
Durbin-Wat    0.365791
```

Appendix D

Details of Quintile-Specific Regressions for Table 3

Dummy Variable	Country Code	Country Name
cdum19	BGD	Bangladesh
cdum28	BRA	Brazil
cdum37	CHL	Chile
cdum38	CHN	China
cdum39	CIV	Ivory Coast
cdum42	COL	Columbia
cdum45	CRI	Costa Rica
cdum56	DOM	Dominican Republic
cdum81	GTM	Guatemala
cdum86	HND	Honduras
cdum90	IDN	Indonesia
cdum92	IND	India
cdum99	JAM	Jamaica
cdum108	KOR	South Korea
cdum116	LKA	Sri Lanka
cdum122	MAR	Morrocco
cdum127	MEX	Mexico
cdum140	MYS	Malaysia
cdum151	OAN	Taiwan
cdum153	PAK	Pakistan
cdum156	PHL	Philippines
cdum188	THA	Thailand
cdum193	TUN	Tunisia
cdum194	TUR	Turkey
cdum196	UGA	Uganda
cdum202	VEN	Venezuela
Not listed	GHA	Ghana

Regression results for Table 3, Panel A (Unconstrained)

```
. *Interaction with wgt2 added;
. *Quintile 1;
. reg lrgdpq1 wlagpc wlnagdpl wgt2 wgt2nag wgt2ag d60 d70 d80 cdum* if sample==
> 1;

  Source |       SS       df       MS              Number of obs =     181
---------+------------------------------           F( 34,   146) =   63.96
   Model |  45.6874337    34  1.34374805           Prob > F      =  0.0000
Residual |  3.06731225   146  .021008988           R-squared     =  0.9371
---------+------------------------------           Adj R-squared =  0.9224
   Total |   48.754746   180    .2708597           Root MSE      =  .14494

------------------------------------------------------------------------------
 lrgdpq1 |      Coef.   Std. Err.       t     P>|t|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
  wlagpc |    1.159593   .1879403      6.170   0.000       .7881582    1.531028
wlnagdpl |    1.026123   .1109597      9.248   0.000       .8068288    1.245418
    wgt2 |    5.095879   1.445961      3.524   0.001       2.238161    7.953597
 wgt2nag |   -.5755173   .1496274     -3.846   0.000      -.8712327   -.2798018
  wgt2ag |   -.9003801   .2521581     -3.571   0.000      -1.398732   -.4020285
     d60 |   -.1131243   .0665404     -1.700   0.091      -.2446312    .0183826
     d70 |   -.0560906   .0536299     -1.046   0.297      -.1620818    .0499005
     d80 |    .0082484    .040939      0.201   0.841      -.0726612     .089158
  cdum19 |    .0649381   .1328817      0.489   0.626      -.1976821    .3275583
  cdum28 |   -.2791627   .1516609     -1.841   0.068       -.578897    .0205716
  cdum37 |    .0731537   .2172754      0.337   0.737      -.3562575     .502565
  cdum38 |    .3942853   .1046464      3.768   0.000       .1874679    .6011027
  cdum39 |     .217878   .1228907      1.773   0.078      -.0249966    .4607526
  cdum42 |   -.0596255   .1537463     -0.388   0.699      -.3634814    .2442305
  cdum45 |    .0337305   .1540787      0.219   0.827      -.2707822    .3382432
  cdum56 |   -.1987243   .1851746     -1.073   0.285      -.5646934    .1672448
  cdum81 |   -.5548599   .1562078     -3.552   0.001      -.8635805   -.2461393
  cdum86 |    -.797725   .1610919     -4.952   0.000      -1.116098   -.4793517
  cdum90 |    .3840899   .1036761      3.705   0.000          .17919    .5889897
  cdum92 |    .3494677   .0945744      3.695   0.000        .162556    .5363794
  cdum99 |   -.0122856   .1817741     -0.068   0.946      -.3715341    .3469629
 cdum108 |    .2156304   .1277061      1.688   0.093      -.0367611    .4680218
 cdum116 |    .1633932   .1153364      1.417   0.159      -.0645514    .3913377
 cdum122 |    .2173701   .1407575      1.544   0.125      -.0608154    .4955555
 cdum127 |    .0954847   .1654109      0.577   0.565      -.2314245    .4223939
 cdum140 |    .0905278    .157621      0.574   0.567      -.2209858    .4020413
 cdum151 |    .4822829    .141892      3.399   0.001       .2018553    .7627105
 cdum153 |    .3800985   .1006051      3.778   0.000       .1812682    .5789289
 cdum188 |    .5422276   .1305482      4.153   0.000       .2842192     .800236
 cdum193 |     .188673   .1722568      1.095   0.275      -.1517659    .5291118
 cdum194 |    .3163385   .1698249      1.863   0.065      -.0192943    .6519712
 cdum196 |    .2260028   .1580024      1.430   0.155      -.0862646    .5382701
 cdum202 |    .2618906   .2036444      1.286   0.200      -.1405811    .6643623
 cdum156 |   -.1357338   .1389923     -0.977   0.330      -.4104306    .1389629
   _cons |   -1.695481   1.048788     -1.617   0.108      -3.768249    .3772875
------------------------------------------------------------------------------
```

```
. *Quintile 2;
. reg lrgdpq2 wlagpc wlnagdpl wgt2 wgt2nag wgt2ag d60 d70 d80 cdum* if sample==
> 1;

  Source |       SS       df       MS                  Number of obs =     181
---------+------------------------------                F( 34,   146) =  150.90
   Model |  52.8446314     34  1.55425386               Prob > F      =  0.0000
Residual |  1.50375828    146  .010299714               R-squared     =  0.9723
---------+------------------------------                Adj R-squared =  0.9659
   Total |  54.3483897    180  .301935498               Root MSE      =  .10149

------------------------------------------------------------------------------
 lrgdpq2 |      Coef.   Std. Err.       t     P>|t|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
  wlagpc |    1.048519   .1315922      7.968   0.000       .7884471     1.30859
wlnagdpl |    .9991872   .0776918     12.861   0.000       .8456414    1.152733
    wgt2 |    1.305826   1.012433      1.290   0.199      -.6950922    3.306744
 wgt2nag |   -.1723443   .1047662     -1.645   0.102      -.3793985    .0347099
  wgt2ag |   -.2376366   .1765562     -1.346   0.180      -.5865727    .1112996
     d60 |   -.0869016   .0465903     -1.865   0.064      -.1789802     .005177
     d70 |   -.0449458   .0375506     -1.197   0.233      -.1191587    .0292671
     d80 |    .0094211   .0286647      0.329   0.743      -.0472302    .0660724
  cdum19 |    .1322649   .0930412      1.422   0.157      -.0516167    .3161464
  cdum28 |   -.1831756     .10619     -1.725   0.087      -.3930437    .0266926
  cdum37 |    .2264577    .152132      1.489   0.139      -.0742076    .5271231
  cdum38 |    .4562236   .0732714      6.226   0.000       .3114141    .6010332
  cdum39 |    .1991592   .0860457      2.315   0.022       .0291031    .3692152
  cdum42 |   -.0474092   .1076502     -0.440   0.660      -.2601632    .1653448
  cdum45 |    .0955284   .1078829      0.885   0.377      -.1176855    .3087422
  cdum56 |    -.052707   .1296557     -0.407   0.685      -.3089514    .2035374
  cdum81 |   -.2804647   .1093736     -2.564   0.011      -.4966248   -.0643046
  cdum86 |   -.3433863   .1127934     -3.044   0.003       -.566305   -.1204675
  cdum90 |    .2960734    .072592      4.079   0.000       .1526065    .4395403
  cdum92 |    .2721379   .0662191      4.110   0.000        .141266    .4030098
  cdum99 |    .2172002   .1272747      1.707   0.090      -.0343386     .468739
 cdum108 |    .2487341   .0894173      2.782   0.006       .0720146    .4254537
 cdum116 |    .2088013   .0807563      2.586   0.011        .049199    .3684037
 cdum122 |    .1878447   .0985556      1.906   0.059      -.0069353    .3826248
 cdum127 |    .0249948   .1158175      0.216   0.829      -.2039006    .2538902
 cdum140 |    .0482292   .1103632      0.437   0.663      -.1698866    .2663449
 cdum151 |    .3593739     .09935      3.617   0.000        .163024    .5557239
 cdum153 |    .2693463   .0704417      3.824   0.000       .1301291    .4085634
 cdum188 |    .5236909   .0914073      5.729   0.000       .3430385    .7043434
 cdum193 |    .2899996   .1206108      2.404   0.017        .051631    .5283683
 cdum194 |    .1997746   .1189081      1.680   0.095      -.0352289    .4347781
 cdum196 |    .2553083   .1106302      2.308   0.022       .0366648    .4739518
 cdum202 |    .2631023   .1425878      1.845   0.067      -.0187005    .5449052
 cdum156 |    .1484581   .0973197      1.525   0.129      -.0438792    .3407954
   _cons |   -.7117037   .7343411     -0.969   0.334      -2.163016    .7396081
------------------------------------------------------------------------------
```

```
. *Quintile 3;
. reg lrgdpq3 wlagpc wlnagdpl wgt2 wgt2nag wgt2ag d60 d70 d80 cdum* if sample==
> 1;

  Source |       SS       df       MS              Number of obs =     181
---------+------------------------------           F( 34,   146) =  240.92
   Model |  60.5388068    34  1.78055314           Prob > F      =  0.0000
Residual |  1.07905304   146  .007390774           R-squared     =  0.9825
---------+------------------------------           Adj R-squared =  0.9784
   Total |  61.6178598   180  .342321443           Root MSE      =  .08597

------------------------------------------------------------------------------
 lrgdpq3 |      Coef.   Std. Err.       t     P>|t|     [95% Conf. Interval]
---------+--------------------------------------------------------------------
  wlagpc |    1.020903   .1114711     9.158   0.000      .8005972    1.241208
wlnagdpl |    .9805669   .0658124    14.899   0.000      .8504989    1.110635
    wgt2 |    .1694169   .8576278     0.198   0.844     -1.525552    1.864386
 wgt2nag |   -.0265625    .088747    -0.299   0.765     -.2019571    .1488322
  wgt2ag |   -.0429634     .14956    -0.287   0.774     -.3385457    .2526188
     d60 |   -.0865655   .0394665    -2.193   0.030     -.1645649   -.0085662
     d70 |   -.0218699   .0318089    -0.688   0.493     -.0847353    .0409955
     d80 |    .0113412   .0242817     0.467   0.641     -.0366478    .0593303
  cdum19 |    .1138216   .0788148     1.444   0.151     -.0419437    .2695868
  cdum28 |   -.0642214   .0899531    -0.714   0.476     -.2419997     .113557
  cdum37 |    .2068762   .1288703     1.605   0.111     -.0478161    .4615685
  cdum38 |    .4517891   .0620678     7.279   0.000      .3291216    .5744566
  cdum39 |    .1986355   .0728889     2.725   0.007      .0545818    .3426892
  cdum42 |   -.0894928     .09119    -0.981   0.328     -.2697158    .0907301
  cdum45 |    .0284093   .0913871     0.311   0.756     -.1522032    .2090218
  cdum56 |   -.0267325   .1098307    -0.243   0.808      -.243796     .190331
  cdum81 |   -.1603824   .0926499    -1.731   0.086     -.3434907    .0227259
  cdum86 |   -.1582713   .0955468    -1.656   0.100     -.3471048    .0305622
  cdum90 |    .2405121   .0614924     3.911   0.000       .118982    .3620423
  cdum92 |    .2182981   .0560939     3.892   0.000      .1074371    .3291592
  cdum99 |    .2324384   .1078138     2.156   0.033       .019361    .4455158
 cdum108 |    .2008771    .075745     2.652   0.009      .0511788    .3505755
 cdum116 |    .1361366   .0684083     1.990   0.048      .0009382     .271335
 cdum122 |    .2176635    .083486     2.607   0.010      .0526662    .3826608
 cdum127 |    .0874339   .0981085     0.891   0.374     -.1064624    .2813301
 cdum140 |   -.0172958   .0934881    -0.185   0.853     -.2020607    .1674691
 cdum151 |    .2884475   .0841589     3.427   0.001      .1221204    .4547747
 cdum153 |    .2098517   .0596708     3.517   0.001      .0919215    .3277819
 cdum188 |    .4866834   .0774307     6.285   0.000      .3336535    .6397133
 cdum193 |    .2898563   .1021689     2.837   0.005      .0879353    .4917774
 cdum194 |    .0943244   .1007265     0.936   0.351      -.104746    .2933948
 cdum196 |    .2500417   .0937143     2.668   0.008      .0648297    .4352536
 cdum202 |    .2030822   .1207855     1.681   0.095     -.0356317    .4417962
 cdum156 |     .011741   .0824391     0.142   0.887     -.1511871     .174669
   _cons |   -.2349117   .6220571    -0.378   0.706     -1.464311    .9944881
------------------------------------------------------------------------------
```

```
. *Quintile 4;
. reg lrgdpq4 wlagpc wlnagdpl wgt2 wgt2nag wgt2ag d60 d70 d80 cdum* if sample==
> 1;

  Source |       SS       df       MS              Number of obs =     181
---------+------------------------------           F( 34,   146) =   50.58
   Model |  68.5362269    34  2.01577138           Prob > F      =  0.0000
Residual |  5.81884389   146  .039855095           R-squared     =  0.9217
---------+------------------------------           Adj R-squared =  0.9035
   Total |  74.3550708   180  .413083727           Root MSE      =  .19964

------------------------------------------------------------------------------
 lrgdpq4 |      Coef.   Std. Err.       t     P>|t|       [95% Conf. Interval]
---------+--------------------------------------------------------------------
  wlagpc |    1.049594   .2588567      4.055   0.000       .5380035    1.561184
wlnagdpl |    1.012351   .1528286      6.624   0.000       .7103094    1.314394
    wgt2 |     .800635   1.991571      0.402   0.688      -3.135398    4.736668
 wgt2nag |   -.0739808   .2060869     -0.359   0.720      -.4812798    .3333182
  wgt2ag |   -.1610798   .3473061     -0.464   0.643      -.8474767     .525317
     d60 |   -.0856688   .0916484     -0.935   0.351      -.2667978    .0954602
     d70 |    .0164342   .0738662      0.222   0.824       -.129551    .1624194
     d80 |    .0079277   .0563867      0.141   0.888      -.1035119    .1193672
  cdum19 |    .1114718   .1830226      0.609   0.543       -.250244    .4731877
  cdum28 |    .0533771   .2088877      0.256   0.799      -.3594572    .4662115
  cdum37 |    .1348615   .2992608      0.451   0.653      -.4565813    .7263043
  cdum38 |     .569307   .1441331      3.950   0.000       .2844502    .8541638
  cdum39 |    .2302518   .1692616      1.360   0.176      -.1042677    .5647713
  cdum42 |   -.0755978   .2117601     -0.357   0.722       -.494109    .3429134
  cdum45 |   -.2800036   .2122178     -1.319   0.189      -.6994194    .1394122
  cdum56 |   -.0164503   .2550474     -0.064   0.949       -.520512    .4876115
  cdum81 |     .036048   .2151503      0.168   0.867      -.3891634    .4612594
  cdum86 |    .0292774   .2218774      0.132   0.895       -.409229    .4677838
  cdum90 |    .2366514   .1427967      1.657   0.100      -.0455642     .518867
  cdum92 |    .1725421   .1302606      1.325   0.187      -.0848978    .4299819
  cdum99 |    .1309041   .2503638      0.523   0.602      -.3639012    .6257094
 cdum108 |    .1660308    .175894      0.944   0.347      -.1815966    .5136581
 cdum116 |    .0893012   .1588567      0.562   0.575      -.2246546     .403257
 cdum122 |    .2211082   .1938701      1.140   0.256      -.1620461    .6042625
 cdum127 |    .1921748   .2278262      0.844   0.400      -.2580884    .6424381
 cdum140 |    .0394653   .2170968      0.182   0.856       -.389593    .4685237
 cdum151 |    .1814778   .1954327      0.929   0.355      -.2047648    .5677203
 cdum153 |     .145869   .1385668      1.053   0.294      -.1279869    .4197248
 cdum188 |    .6348532   .1798085      3.531   0.001       .2794894     .990217
 cdum193 |    .2152044   .2372551      0.907   0.366      -.2536937    .6841025
 cdum194 |    .3108297   .2339057      1.329   0.186      -.1514488    .7731082
 cdum196 |    .3000953   .2176221      1.379   0.170      -.1300012    .7301919
 cdum202 |     .101974   .2804864      0.364   0.717      -.4523641    .6563121
 cdum156 |    .1665546   .1914388      0.870   0.386      -.2117946    .5449038
   _cons |   -.1204395   1.444532     -0.083   0.934      -2.975334    2.734455
------------------------------------------------------------------------------
```

```
. *Quintile 5;
. reg lrgdpq5 wlagpc wlnagdpl wgt2 wgt2nag wgt2ag d60 d70 d80 cdum* if sample==
> 1;
```

Source	SS	df	MS		
Model	97.4401054	34	2.86588545	Number of obs	181
Residual	.892199832	146	.006110958	F(34, 146)	468.97
Total	98.3323052	180	.546290585	Prob > F	0.0000
				R-squared	0.9909
				Adj R-squared	0.9888
				Root MSE	.07817

lrgdpq5	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
wlagpc	1.072926	.1013613	10.585	0.000	.872601	1.273251
wlnagdpl	.9879613	.0598435	16.509	0.000	.8696898	1.106233
wgt2	-.7243831	.7798454	-0.929	0.354	-2.265627	.8168609
wgt2nag	.0712309	.0806981	0.883	0.379	-.0882563	.2307182
wgt2ag	.1806942	.1359957	1.329	0.186	-.0880803	.4494686
d60	-.1010005	.0358871	-2.814	0.006	-.1719257	-.0300752
d70	-.0969386	.028924	-3.351	0.001	-.1541024	-.0397747
d80	-.0552674	.0220795	-2.503	0.013	-.0989041	-.0116307
cdum19	.0926143	.0716667	1.292	0.198	-.0490239	.2342524
cdum28	.6047648	.0817948	7.394	0.000	.4431101	.7664196
cdum37	.5254003	.1171825	4.484	0.000	.2938073	.7569934
cdum38	.2672748	.0564386	4.736	0.000	.1557326	.3788171
cdum39	.1856602	.0662783	2.801	0.006	.0546714	.316649
cdum42	.3416959	.0829195	4.121	0.000	.1778182	.5055735
cdum45	.2841667	.0830988	3.420	0.001	.1199348	.4483986
cdum56	.3298421	.0998697	3.303	0.001	.1324651	.5272191
cdum81	.3501715	.0842471	4.156	0.000	.1836702	.5166728
cdum86	.3306598	.0868812	3.806	0.000	.1589525	.502367
cdum90	.2706047	.0559153	4.840	0.000	.1600967	.3811127
cdum92	.0911775	.0510065	1.788	0.076	-.009629	.191984
cdum99	.471768	.0980357	4.812	0.000	.2780157	.6655204
cdum108	.1841058	.0688753	2.673	0.008	.0479843	.3202273
cdum116	.1565501	.062204	2.517	0.013	.0336135	.2794867
cdum122	.360116	.0759143	4.744	0.000	.2100831	.5101489
cdum127	.5900555	.0892106	6.614	0.000	.4137446	.7663664
cdum140	.2473664	.0850092	2.910	0.004	.0793587	.415374
cdum151	.1567769	.0765262	2.049	0.042	.0055347	.308019
cdum153	.1332754	.054259	2.456	0.015	.0260408	.24051
cdum188	.4759772	.0704082	6.760	0.000	.3368263	.615128
cdum193	.2777721	.0929027	2.990	0.003	.0941643	.4613799
cdum194	.1648186	.0915912	1.800	0.074	-.0161972	.3458344
cdum196	.1027013	.0852149	1.205	0.230	-.0657128	.2711155
cdum202	.4380861	.1098309	3.989	0.000	.2210223	.6551499
cdum156	.3154278	.0749623	4.208	0.000	.1672765	.4635792
_cons	.5776665	.5656397	1.021	0.309	-.540233	1.695566

```
. log close;
```

Regression results for Table 3, Panel B (Constrained System Estimation)

System: AGNAGGDP
Estimation Method: Least Squares
Date: 12/08/97 Time: 14:31
Sample: 1 181

	Coefficient	Std. Error	t-Statistic	Prob.
		Quintile 1		
Constant	-1.6219	0.7609	-2.1316	0.0333
Ag pc Y	1.1464	0.1364	8.4080	0.0000
NAg pc Y	1.0184	0.0805	12.6452	0.0000
Wgt*Ag pc Y	-0.8890	0.1836	-4.8408	0.0000
Wgt*NAg pc Y	-0.5691	0.1090	-5.2202	0.0000
Wgt	5.0319	1.0532	4.7775	0.0000
d60	-0.1139	0.0488	-2.3327	0.0198
d70	-0.0569	0.0393	-1.4454	0.1486
d80	0.0077	0.0300	0.2566	0.7975
C(10)	0.0710	0.0971	0.7313	0.4648
C(11)	-0.2768	0.1113	-2.4874	0.0130
C(12)	0.0753	0.1595	0.4722	0.6369
C(13)	0.3969	0.0767	5.1745	0.0000
C(14)	0.2206	0.0901	2.4472	0.0146
C(15)	-0.0574	0.1128	-0.5091	0.6108
C(16)	0.0361	0.1131	0.3195	0.7494
C(17)	-0.1971	0.1359	-1.4506	0.1472
C(18)	-0.5526	0.1146	-4.8205	0.0000
C(19)	-0.7963	0.1182	-6.7351	0.0000
C(20)	0.3851	0.0761	5.0604	0.0000
C(21)	0.3511	0.0694	5.0598	0.0000
C(22)	-0.0111	0.1334	-0.0830	0.9339
C(23)	0.2168	0.0937	2.3132	0.0209
C(24)	0.1650	0.0846	1.9499	0.0514
C(25)	0.2179	0.1033	2.1090	0.0352
C(26)	0.0982	0.1214	0.8091	0.4186
C(27)	0.0933	0.1157	0.8064	0.4202
C(28)	0.4843	0.1041	4.6511	0.0000
C(29)	0.3805	0.0739	5.1511	0.0000
C(30)	0.5444	0.0958	5.6827	0.0000
C(31)	0.1901	0.1264	1.5038	0.1329
C(32)	0.3194	0.1246	2.5638	0.0105
C(33)	0.2275	0.1160	1.9617	0.0500
C(34)	0.2644	0.1495	1.7692	0.0771
C(171)	-0.1340	0.1020	-1.3135	0.1893
		Quintile 2		
Constant	-0.5981	0.7479	-0.7996	0.4241
Ag pc Y	1.0282	0.1340	7.6717	0.0000
NAg pc Y	0.9873	0.0792	12.4624	0.0000
Wgt*Ag pc Y	-0.2211	0.1813	-1.2197	0.2228
Wgt*NAg pc Y	-0.1630	0.1077	-1.5143	0.1303
Wgt	1.2132	1.0399	1.1666	0.2436
d60	-0.0882	0.0488	-1.8062	0.0712
d70	-0.0461	0.0393	-1.1729	0.2411
d80	0.0086	0.0300	0.2867	0.7744
C(39)	0.1416	0.0964	1.4691	0.1421
C(40)	-0.1795	0.1112	-1.6138	0.1069
C(41)	0.2297	0.1594	1.4407	0.1500
C(42)	0.4603	0.0765	6.0139	0.0000
C(43)	0.2033	0.0900	2.2594	0.0241
C(44)	-0.0440	0.1128	-0.3901	0.6965
C(45)	0.0994	0.1130	0.8798	0.3792
C(46)	-0.0505	0.1358	-0.3720	0.7100

	Coefficient	Std. Error	t-Statistic	Prob.
C(47)	-0.2768	0.1146	-2.4163	0.0158
C(48)	-0.3414	0.1182	-2.8887	0.0039
C(49)	0.2976	0.0761	3.9123	0.0001
C(50)	0.2746	0.0693	3.9619	0.0001
C(51)	0.2187	0.1332	1.6414	0.1010
C(52)	0.2507	0.0937	2.6748	0.0076
C(53)	0.2113	0.0846	2.4987	0.0126
C(54)	0.1888	0.1033	1.8268	0.0680
C(55)	0.0295	0.1213	0.2435	0.8077
C(56)	0.0528	0.1155	0.4570	0.6478
C(57)	0.3626	0.1041	3.4842	0.0005
C(58)	0.2699	0.0739	3.6545	0.0003
C(59)	0.5273	0.0957	5.5098	0.0000
C(60)	0.2921	0.1264	2.3114	0.0210
C(61)	0.2051	0.1243	1.6502	0.0992
C(62)	0.2574	0.1159	2.2213	0.0265
C(63)	0.2672	0.1494	1.7885	0.0740
C(172)	0.1511	0.1019	1.4824	0.1385
		Quintile 3		
Constant	-0.0851	0.7309	-0.1164	0.9073
Ag pc Y	0.9942	0.1310	7.5897	0.0000
NAg pc Y	0.9649	0.0775	12.4500	0.0000
Wgt*Ag pc Y	-0.0223	0.1780	-0.1255	0.9002
Wgt*NAg pc Y	-0.0150	0.1057	-0.1417	0.8873
Wgt	0.0538	1.0209	0.0527	0.9580
d60	-0.0883	0.0488	-1.8093	0.0707
d70	-0.0233	0.0392	-0.5946	0.5522
d80	0.0103	0.0300	0.3430	0.7317
C(68)	0.1260	0.0954	1.3204	0.1870
C(69)	-0.0592	0.1111	-0.5332	0.5940
C(70)	0.2110	0.1593	1.3243	0.1857
C(71)	0.4571	0.0763	5.9899	0.0000
C(72)	0.2042	0.0898	2.2731	0.0232
C(73)	-0.0849	0.1127	-0.7539	0.4511
C(74)	0.0337	0.1129	0.2985	0.7654
C(75)	-0.0241	0.1356	-0.1778	0.8589
C(76)	-0.1554	0.1145	-1.3575	0.1749
C(77)	-0.1558	0.1181	-1.3191	0.1874
C(78)	0.2426	0.0760	3.1898	0.0015
C(79)	0.2216	0.0692	3.2007	0.0014
C(80)	0.2340	0.1330	1.7594	0.0788
C(81)	0.2035	0.0937	2.1723	0.0300
C(82)	0.1395	0.0845	1.6506	0.0991
C(83)	0.2189	0.1033	2.1189	0.0343
C(84)	0.0938	0.1211	0.7745	0.4388
C(85)	-0.0109	0.1153	-0.0947	0.9245
C(86)	0.2928	0.1040	2.8155	0.0050
C(87)	0.2106	0.0739	2.8516	0.0044
C(88)	0.4917	0.0955	5.1464	0.0000
C(89)	0.2924	0.1263	2.3157	0.0208
C(90)	0.1020	0.1238	0.8242	0.4100
C(91)	0.2526	0.1158	2.1821	0.0293
C(92)	0.2087	0.1493	1.3976	0.1625
C(173)	0.0150	0.1018	0.1478	0.8825
		Quintile 4		
Constant	0.0835	0.6954	0.1201	0.9044
Ag pc Y	1.0132	0.1246	8.1307	0.0000
NAg pc Y	0.9909	0.0739	13.4100	0.0000

	Coefficient	Std. Error	t-Statistic	Prob.
Wgt*Ag pc Y	-0.1347	0.1704	-0.7901	0.4296
Wgt*NAg pc Y	-0.0593	0.1014	-0.5846	0.5589
Wgt	0.6531	0.9779	0.6679	0.5044
d60	-0.0880	0.0487	-1.8067	0.0711
d70	0.0145	0.0391	0.3710	0.7107
d80	0.0065	0.0299	0.2179	0.8276
C(97)	0.1280	0.0936	1.3682	0.1715
C(98)	0.0603	0.1109	0.5439	0.5866
C(99)	0.1403	0.1591	0.8815	0.3782
C(100)	0.5765	0.0759	7.5996	0.0000
C(101)	0.2378	0.0895	2.6585	0.0080
C(102)	-0.0693	0.1125	-0.6165	0.5377
C(103)	-0.2725	0.1126	-2.4203	0.0157
C(104)	-0.0133	0.1353	-0.0983	0.9217
C(105)	0.0432	0.1142	0.3782	0.7053
C(106)	0.0324	0.1179	0.2752	0.7832
C(107)	0.2395	0.0760	3.1514	0.0017
C(108)	0.1770	0.0690	2.5634	0.0105
C(109)	0.1324	0.1324	0.9999	0.3176
C(110)	0.1697	0.0936	1.8130	0.0701
C(111)	0.0939	0.0844	1.1127	0.2661
C(112)	0.2229	0.1033	2.1579	0.0312
C(113)	0.2013	0.1206	1.6694	0.0953
C(114)	0.0487	0.1148	0.4241	0.6716
C(115)	0.1874	0.1038	1.8057	0.0712
C(116)	0.1469	0.0738	1.9892	0.0469
C(117)	0.6421	0.0952	6.7470	0.0000
C(118)	0.2184	0.1261	1.7326	0.0834
C(119)	0.3223	0.1225	2.6310	0.0086
C(120)	0.3034	0.1155	2.6255	0.0088
C(121)	0.1098	0.1491	0.7368	0.4614
C(174)	0.1709	0.1015	1.6827	0.0927
	Quintile 5			
Constant	0.9443	0.4796	1.9689	0.0492
Ag pc Y	1.0077	0.0859	11.7260	0.0000
NAg pc Y	0.9492	0.0523	18.1430	0.0000
Wgt*Ag pc Y	0.2163	0.1022	2.1155	0.0346
Wgt*NAg pc Y	0.0904	0.0605	1.4930	0.1357
Wgt	-0.9201	0.5822	-1.5803	0.1143
d60	-0.1056	0.0484	-2.1817	0.0293
d70	-0.0998	0.0384	-2.6024	0.0094
d80	-0.0576	0.0296	-1.9443	0.0521
C(126)	0.1219	0.0835	1.4602	0.1445
C(127)	0.6184	0.1096	5.6420	0.0000
C(128)	0.5338	0.1579	3.3809	0.0007
C(129)	0.2799	0.0735	3.8074	0.0001
C(130)	0.1995	0.0876	2.2773	0.0230
C(131)	0.3534	0.1115	3.1692	0.0016
C(132)	0.2995	0.1108	2.7032	0.0070
C(133)	0.3326	0.1323	2.5144	0.0121
C(134)	0.3653	0.1121	3.2582	0.0012
C(135)	0.3346	0.1164	2.8744	0.0041
C(136)	0.2757	0.0757	3.6429	0.0003
C(137)	0.0991	0.0681	1.4548	0.1460
C(138)	0.4700	0.1265	3.7142	0.0002
C(139)	0.1915	0.0932	2.0552	0.0401
C(140)	0.1648	0.0836	1.9706	0.0490
C(141)	0.3640	0.1032	3.5278	0.0004
C(142)	0.6101	0.1162	5.2502	0.0000

	Coefficient	Std. Error	t-Statistic	Prob.
C(143)	0.2677	0.1099	2.4372	0.0150
C(144)	0.1682	0.1028	1.6356	0.1022
C(145)	0.1351	0.0738	1.8312	0.0673
C(146)	0.4919	0.0917	5.3656	0.0000
C(147)	0.2816	0.1244	2.2633	0.0238
C(148)	0.1925	0.1079	1.7842	0.0747
C(149)	0.1067	0.1137	0.9378	0.3486
C(150)	0.4541	0.1476	3.0765	0.0021
C(175)	0.3218	0.0999	3.2209	0.0013

Determinant residual covar 0.0000

```
Equation: LRGDPQ1=C(1) + C(2)*WLAGPC + C(151)*WLNAGDPL +
        C(152)*WGT2*WLAGPC + C(153)*WGT2*WLNAGDPL +
        C(154)*WGT2 + C(7)*D60 + C(8)*D70 + C(9)*D80 +
        C(10)*CDUM19 + C(11)*CDUM28 + C(12)*CDUM37 +
        C(13)*CDUM38 + C(14)*CDUM39 + C(15)*CDUM42 +
        C(16)*CDUM45 + C(17)*CDUM56 + C(18)*CDUM81 +
        C(19)*CDUM86 + C(20)*CDUM90 + C(21)*CDUM92 +
        C(22)*CDUM99 + C(23)*CDUM108 + C(24)*CDUM116 +
        C(25)*CDUM122 + C(26)*CDUM127 + C(27)*CDUM140 +
        C(28)*CDUM151 + C(29)*CDUM153 + C(30)*CDUM188 +
        C(31)*CDUM193 + C(32)*CDUM194 + C(33)*CDUM196 +
        C(34)*CDUM202 + C(171)*CDUM156
Observations: 181
```

R-squared	0.9371	Mean dependent var	6.3150
Adjusted R-sq	0.9224	S.D. dependent var	0.5204
S.E. of regre	0.1449	Sum squared resid	3.0674
Durbin-Watson	1.8838		

```
-------------------------------------------------------------
Equation: LRGDPQ2=C(35) + C(3)*WLAGPC + C(155)*WLNAGDPL +
        C(156)*WGT2*WLAGPC + C(157)*WGT2*WLNAGDPL +
        C(158)*WGT2 + C(36)*D60 + C(37)*D70 + C(38)*D80 +
        C(39)*CDUM19 + C(40)*CDUM28 + C(41)*CDUM37 +
        C(42)*CDUM38 + C(43)*CDUM39 + C(44)*CDUM42 +
        C(45)*CDUM45 + C(46)*CDUM56 + C(47)*CDUM81 +
        C(48)*CDUM86 + C(49)*CDUM90 + C(50)*CDUM92 +
        C(51)*CDUM99 + C(52)*CDUM108 + C(53)*CDUM116 +
        C(54)*CDUM122 + C(55)*CDUM127 + C(56)*CDUM140 +
        C(57)*CDUM151 + C(58)*CDUM153 + C(59)*CDUM188 +
        C(60)*CDUM193 + C(61)*CDUM194 + C(62)*CDUM196 +
        C(63)*CDUM202 + C(172)*CDUM156
Observations: 181
```

R-squared	0.9723	Mean dependent var	6.8820
Adjusted R-sq	0.9659	S.D. dependent var	0.5495
S.E. of regre	0.1015	Sum squared resid	1.5040
Durbin-Watson	1.8395		

```
-------------------------------------------------------------
Equation: LRGDPQ3=C(64) + C(4)*WLAGPC + C(159)*WLNAGDPL +
        C(160)*WGT2*WLAGPC + C(161)*WGT2*WLNAGDPL +
        C(162)*WGT2 + C(65)*D60 + C(66)*D70 + C(67)*D80 +
        C(68)*CDUM19 + C(69)*CDUM28 + C(70)*CDUM37 +
        C(71)*CDUM38 + C(72)*CDUM39 + C(73)*CDUM42 +
        C(74)*CDUM45 + C(75)*CDUM56 + C(76)*CDUM81 +
        C(77)*CDUM86 + C(78)*CDUM90 + C(79)*CDUM92 +
        C(80)*CDUM99 + C(81)*CDUM108 + C(82)*CDUM116 +
        C(83)*CDUM122 + C(84)*CDUM127 + C(85)*CDUM140 +
        C(86)*CDUM151 + C(87)*CDUM153 + C(88)*CDUM188 +
```

```
             Coefficient  Std. Error   t-Statistic  Prob.
        C(89)*CDUM193 + C(90)*CDUM194 + C(91)*CDUM196 +
        C(92)*CDUM202 + C(173)*CDUM156
Observations: 181

R-squared            0.9825     Mean dependent var       7.2401
Adjusted R-sq        0.9784     S.D. dependent var       0.5851
S.E. of regre        0.0860     Sum squared resid        1.0795
Durbin-Watson        2.0217
------------------------------------------------------------
Equation: LRGDPQ4=C(93) + C(5)*WLAGPC + C(163)*WLNAGDPL +
        C(164)*WGT2*WLAGPC + C(165)*WGT2*WLNAGDPL +
        C(166)*WGT2  + C(94)*D60 + C(95)*D70 + C(96)*D80 +
        C(97)*CDUM19 + C(98)*CDUM28 + C(99)*CDUM37 +
        C(100)*CDUM38 + C(101)*CDUM39 + C(102)*CDUM42 +
        C(103)*CDUM45 + C(104)*CDUM56 + C(105)*CDUM81 +
        C(106)*CDUM86 + C(107)*CDUM90 + C(108)*CDUM92 +
        C(109)*CDUM99 + C(110)*CDUM108 + C(111)*CDUM116 +
        C(112)*CDUM122 + C(113)*CDUM127 + C(114)*CDUM140 +
        C(115)*CDUM151 + C(116)*CDUM153 + C(117)*CDUM188 +
        C(118)*CDUM193 + C(119)*CDUM194 + C(120)*CDUM196 +
        C(121)*CDUM202 +C(174)*CDUM156
Observations: 181

R-squared            0.9217     Mean dependent var       7.6183
Adjusted R-sq        0.9035     S.D. dependent var       0.6427
S.E. of regre        0.1997     Sum squared resid        5.8198
Durbin-Watson        1.9994
------------------------------------------------------------
Equation: LRGDPQ5=C(122) + C(6)*WLAGPC + C(167)*WLNAGDPL +
        C(168)*WGT2*WLAGPC + C(169)*WGT2*WLNAGDPL +
        C(170)*WGT2  + C(123)*D60 + C(124)*D70 + C(125)*D80 +
        C(126)*CDUM19 + C(127)*CDUM28 + C(128)*CDUM37 +
        C(129)*CDUM38 + C(130)*CDUM39 + C(131)*CDUM42 +
        C(132)*CDUM45 + C(133)*CDUM56 + C(134)*CDUM81 +
        C(135)*CDUM86 + C(136)*CDUM90 + C(137)*CDUM92 +
        C(138)*CDUM99 + C(139)*CDUM108 + C(140)*CDUM116 +
        C(141)*CDUM122 + C(142)*CDUM127 + C(143)*CDUM140 +
        C(144)*CDUM151 + C(145)*CDUM153 + C(146)*CDUM188 +
        C(147)*CDUM193 + C(148)*CDUM194 + C(149)*CDUM196 +
        C(150)*CDUM202 +C(175)*CDUM156
Observations: 181

R-squared            0.9909     Mean dependent var       8.4274
Adjusted R-sq        0.9888     S.D. dependent var       0.7391
S.E. of regre        0.0783     Sum squared resid        0.8958
Durbin-Watson        1.5816
------------------------------------------------------------
Equation: C(2)*0.08*0.598+C(3)*0.124*0.598+C(4)*0.164*0.598
        +C(5)*0.224*0.598+C(6)*0.408*0.598+C(151)*0.08*0.402
        +C(155)*0.124*0.402+C(159)*0.164*0.402+C(163)*0.224*0.402
        +C(167)*0.408*0.402=1
Observations: 181

S.E. of regre        0.0007     Sum squared resid        0.0001
------------------------------------------------------------
Equation: ((C(2)+C(152))*.0416*.42+(C(3)+C(156))*.0815*.42+(C(4)
        +C(160))*.1259*.42+(C(5)+C(164))*.1989*.42+(C(6)
        +C(168))*.5522*.42+(C(151)+C(153))*.0416*.58+(C(155)
        +C(157))*.0815*.58+(C(159)+C(161))*.1259*.58+(C(163)
        +C(165))*.1989*.58+(C(167)+C(169))*.5522*.58)=1
```

	Coefficient	Std. Error	t-Statistic	Prob.
Observations: 181				
S.E. of regre	0.0004	Sum squared resid		0.0000

Appendix E

Tests of the Differential Impact of Agricultural Productivity on Growth in Per Capita Incomes by Quintile, and for Existence of the "Kuznets Curve"

LS // Dependent Variable is ELASWT0
Date: 12-14-1997 / Time: 12:03
SMPL range: 1 - 10
Number of observations: 10

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	1.1220000	0.0475446	23.598881	0.0000
AGDUM	0.0558000	0.0194100	2.8748059	0.0282
QI	-0.0866072	0.0354693	-2.4417501	0.0504
QISQ	0.0108929	0.0057999	1.8781279	0.1094

R-squared	0.780866	Mean of dependent var	1.009900
Adjusted R-squared	0.671299	S.D. of dependent var	0.053530
S.E. of regression	0.030690	Sum of squared resid	0.005651
Log likelihood	23.20295	F-statistic	7.126832
Durbin-Watson stat	1.842790	Prob(F-statistic)	0.021035

Residual Plot	obs	RESIDUAL	ACTUAL	FITTED
: * :	1	0.04391	1.14600	1.10209
: * :	2	-0.02016	1.02800	1.04816
: * :	3	-0.02201	0.99400	1.01601
: * :	4	0.00734	1.01300	1.00566
: * :	5	-0.00909	1.00800	1.01709
:* :	6	-0.02829	1.01800	1.04629
: * :	7	-0.00536	0.98700	0.99236
: * :	8	0.00479	0.96500	0.96021
: * :	9	0.04114	0.99100	0.94986
: * :	10	-0.01229	0.94900	0.96129

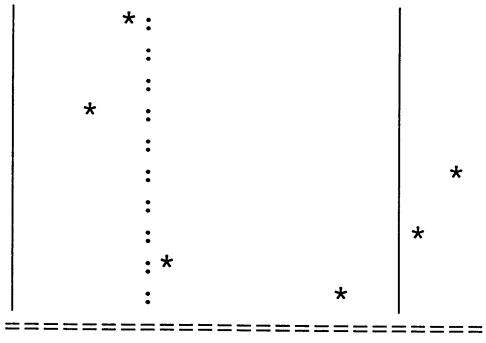
obs	AGDUM	ELASWT0	QI	QISQ
1	1.000000	1.146000	1.000000	1.000000
2	1.000000	1.028000	2.000000	4.000000
3	1.000000	0.994000	3.000000	9.000000
4	1.000000	1.013000	4.000000	16.00000
5	1.000000	1.008000	5.000000	25.00000
6	0.000000	1.018000	1.000000	1.000000
7	0.000000	0.987000	2.000000	4.000000
8	0.000000	0.965000	3.000000	9.000000
9	0.000000	0.991000	4.000000	16.00000
10	0.000000	0.949000	5.000000	25.00000

LS // Dependent Variable is ELASWT1
Date: 12-14-1997 / Time: 11:48
SMPL range: 1 - 10
Number of observations: 10

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	0.0081000	0.2124478	0.0381270	0.9708
AGDUM	-0.0112000	0.0867315	-0.1291343	0.9015
QI	0.4532928	0.1584906	2.8600615	0.0288
QISQ	-0.0481071	0.0259160	-1.8562731	0.1128

R-squared	0.843315	Mean of dependent var	0.833200
Adjusted R-squared	0.764973	S.D. of dependent var	0.282871
S.E. of regression	0.137134	Sum of squared resid	0.112835
Log likelihood	8.232674	F-statistic	10.76448
Durbin-Watson stat	2.344549	Prob(F-statistic)	0.007903

Residual Plot



obs	RESIDUAL	ACTUAL	FITTED
1	-0.14509	0.25700	0.40209
2	0.09594	0.80700	0.71106
3	0.04819	0.97200	0.92381
4	-0.16236	0.87800	1.04036
5	0.16331	1.22400	1.06069
6	0.03571	0.44900	0.41329
7	0.10174	0.82400	0.72226
8	0.01499	0.95000	0.93501
9	-0.11956	0.93200	1.05156
10	-0.03289	1.03900	1.07189

obs	AGDUM	ELASWT1	QI	QISQ
1	1.000000	0.257000	1.000000	1.000000
2	1.000000	0.807000	2.000000	4.000000
3	1.000000	0.972000	3.000000	9.000000
4	1.000000	0.878000	4.000000	16.00000
5	1.000000	1.224000	5.000000	25.00000
6	0.000000	0.449000	1.000000	1.000000
7	0.000000	0.824000	2.000000	4.000000
8	0.000000	0.950000	3.000000	9.000000
9	0.000000	0.932000	4.000000	16.00000
10	0.000000	1.039000	5.000000	25.00000